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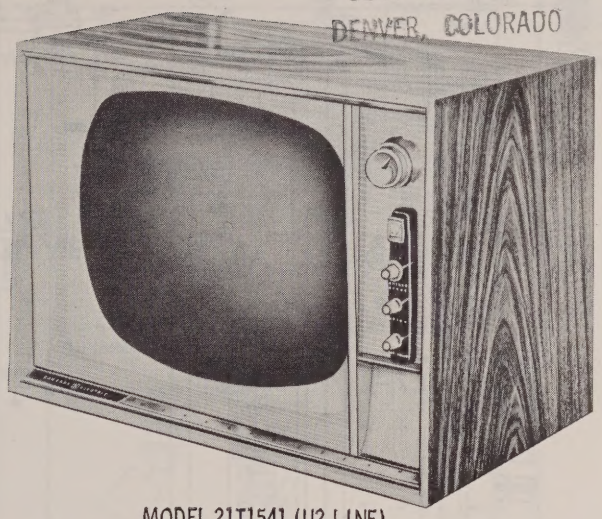
21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the front.
2. Remove 8 metal screws from the rear cover. Remove the rear cover.
3. Remove the speaker leads.
4. Remove 2 metal screws from the brace at the upper left side of the cabinet.
5. Remove 2 hex nuts holding the right hand picture tube braces.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.



MODEL 21T1541 (U2 LINE)

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru 21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

TRADE NAME	General Electric	MODELS
		21C1545, 21C1547, 21C1548, 21C1549, 21C1550, 21C1551, 21C1552, 21C1553, 21C1554, 21C1555, 21C1556, 21C1560, 21C1562, 21C1564, 21T1539, 21T1540, 21T1541, 21T1542, 21T1543, 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 ...(U2 Line)
MANUFACTURER	General Electric Co., Appliance and Television Receiver Div., Louisville, Ky.	
TYPE SET	Television Receiver	
TUBES	Seventeen	
POWER SUPPLY	110-125 Volts AC, 60 Cycle	RATING 190 Watts, 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 13 adjustment is located at 11 o'clock, proceed in counter clockwise direction adjusting for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 metal screws from the bottom holding the trim strip at the bottom of the safety glass. Remove the trim strip and safety glass.

FOCUS

Focus may be varied by the connection of the lead from pin 6 of the picture tube to ground, low B boost or high B boost at the lower right hand edge of the printed board. Readjust ion trap for maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A12) located on top of chassis.

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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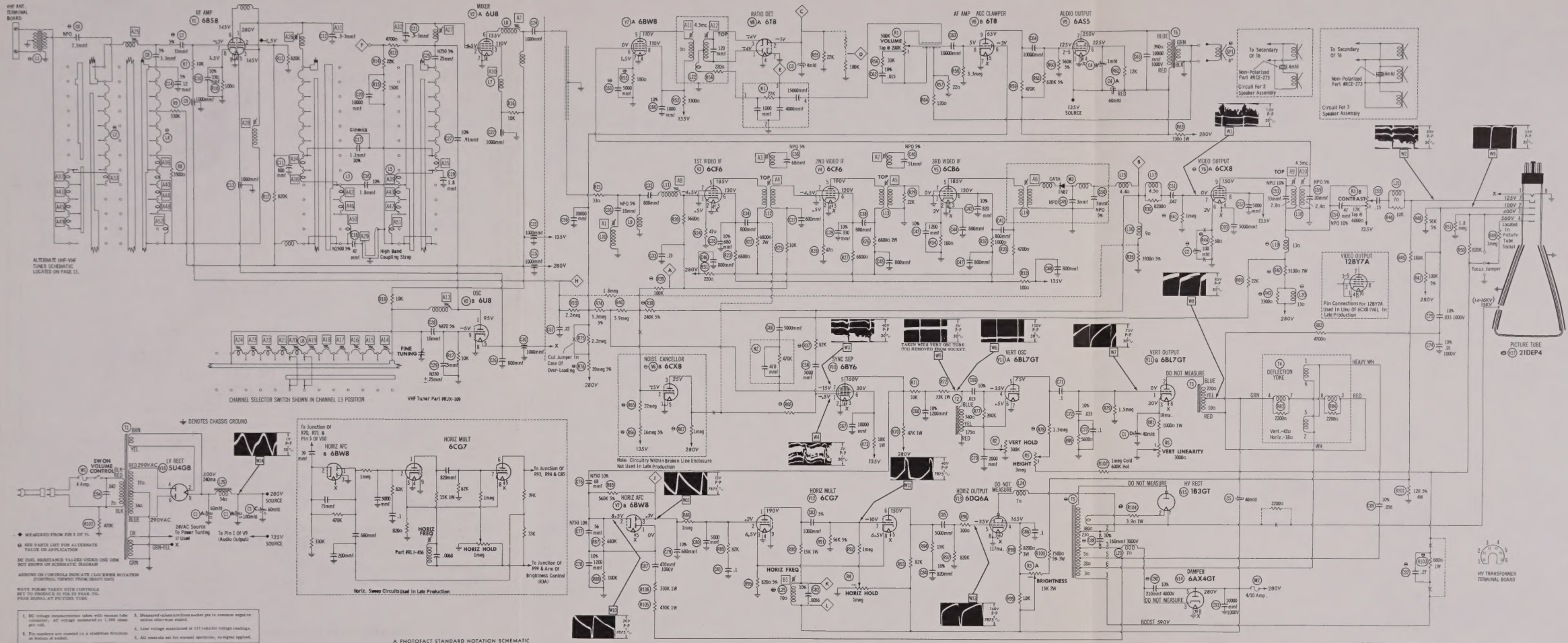
VHF ANT. TERMINAL BOARD
RF AMP V1 6BS8
MIXER V2 A 6U8
OSC V2 B 6U8
1ST VIDEO IF V3 6CF6
2ND VIDEO IF V4 6CF6
3RD VIDEO IF V5 6CB6
RATIO DET V6 A 6T8
AF AMP AGC CLAMPER V6 B 6T8
AUDIO OUTPUT V9 6AS5
VIDEO OUTPUT V9 A 6CX8
VIDEO OUTPUT 12BY7A
V7 A 6BW8
SYNC SEP V10 6BY6
VERT OSC V11 A 6BL7GT
VERT OUTPUT V11 B 6BL7GT
NOISE CANCELLER V8 B 6CX8
HORIZ AFC V7 B 6BW8
HORIZ MULT V12 6CG7
HORIZ OUTPUT V13 6DQ6A
HV RECT V13 1B3GT
DAMPER V14 6AX4GT
LV RECT V16 5U4GB
PICTURE TUBE V17 21DEP4
ALTERNATE UHF-VHF TUNER SCHEMATIC LOCATED ON PAGE 13.
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner Part #RJX-109
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
FINE TUNING
CONTRAST
BRIGHTNESS
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
DEFLECTION YOKE
HEAVY WH
WH
Focus Jumper
HV TRANSFORMER TERMINAL BOARD
To Secondary Of T6
Non-Polarized Part #RCE-273
Circuit For 2 Speaker Assembly
Circuit For 3 Speaker Assembly
High Band Coupling Strap
Gimmick
Cut Jumper In Case Of Over-Loading
To Junction Of R70, R71 & Pin 5 Of V10
To Junction Of R93, R94 & C85
To Pin 1 Of V9 (Audio Output)
To Junction Of R99 & Arm Of Brightness Control (R3A)
Horiz. Sweep Circuits Used In Late Production
Note: Circuitry Within Broken Line Enclosure Not Used In Late Production
TAKEN WITH VERT OSC TUBE (V11) REMOVED FROM SOCKET.
DO NOT MEASURE
BOOST 590V
280V SOURCE
135V SOURCE
26VAC Source To Power Tuning If Used
Part #RL1-156
.0068
1meg
HORIZ FREQ
HORIZ HOLD
BRIGHTNESS
15K 2W
4/10 Amp.
- ◆ MEASURED FROM PIN 5 OF V1.
- ⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT SIDE)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru 21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

TUBE PLACEMENT CHART

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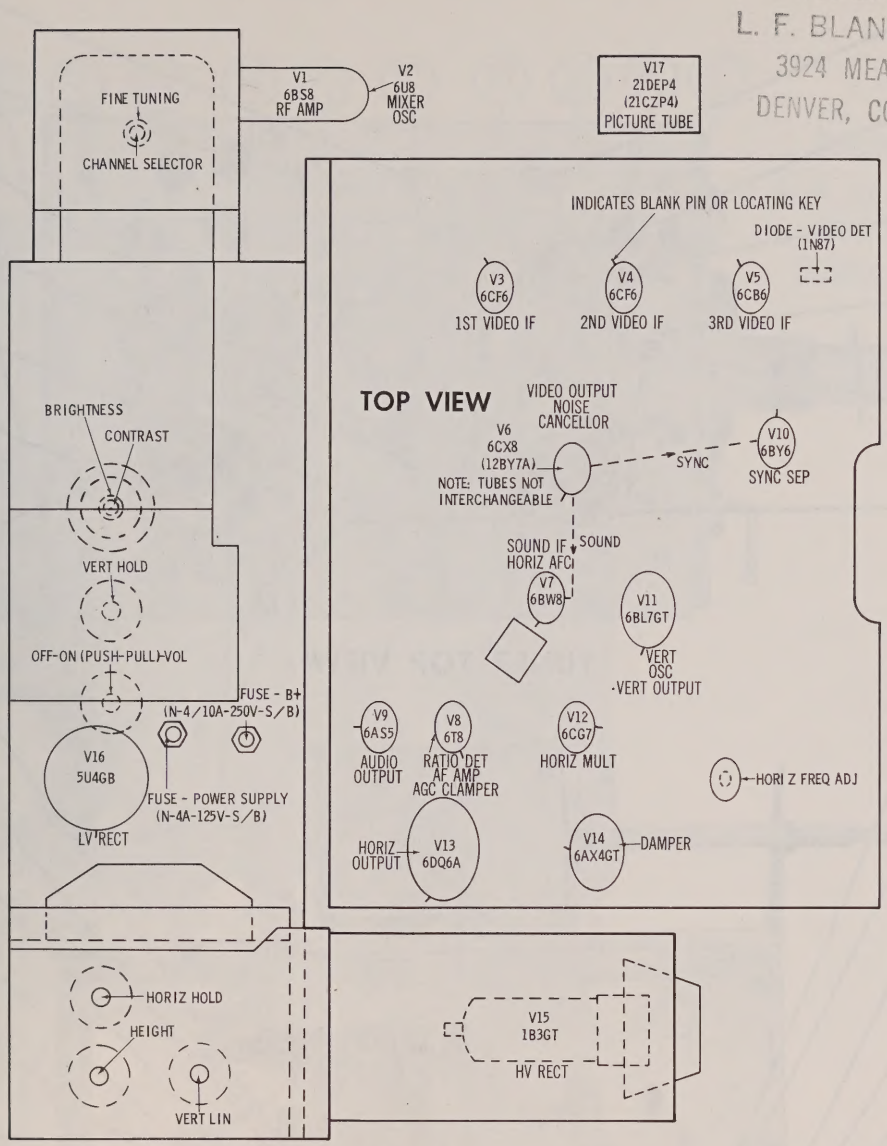


TUBE FAILURE CHECK CHART

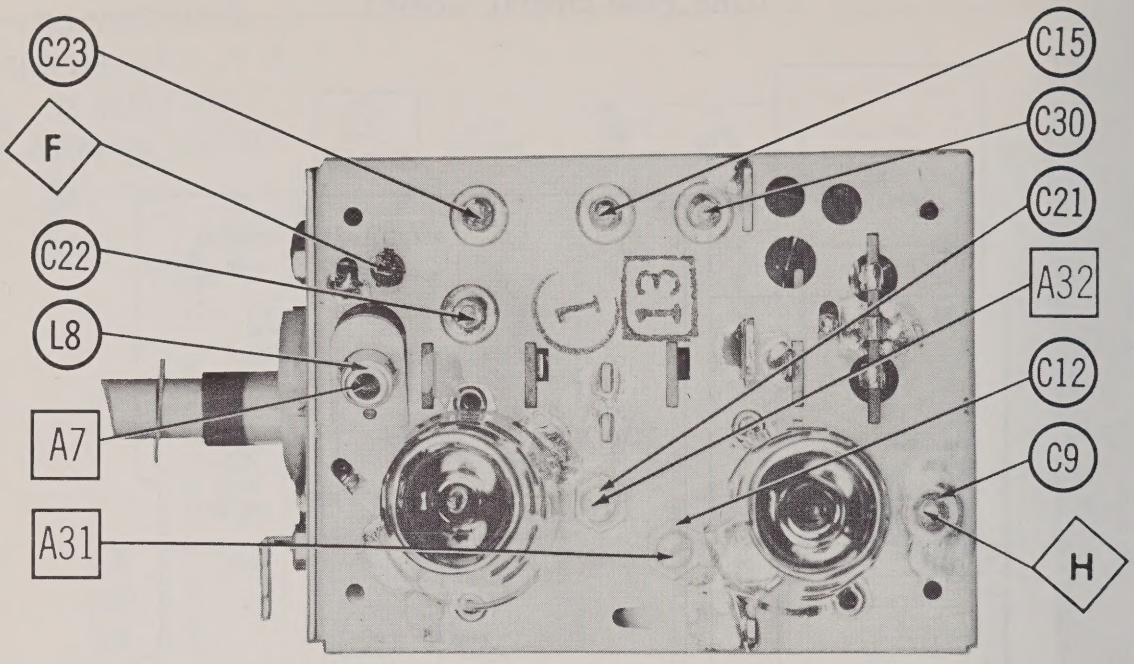
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **Fuse (M1), V16**

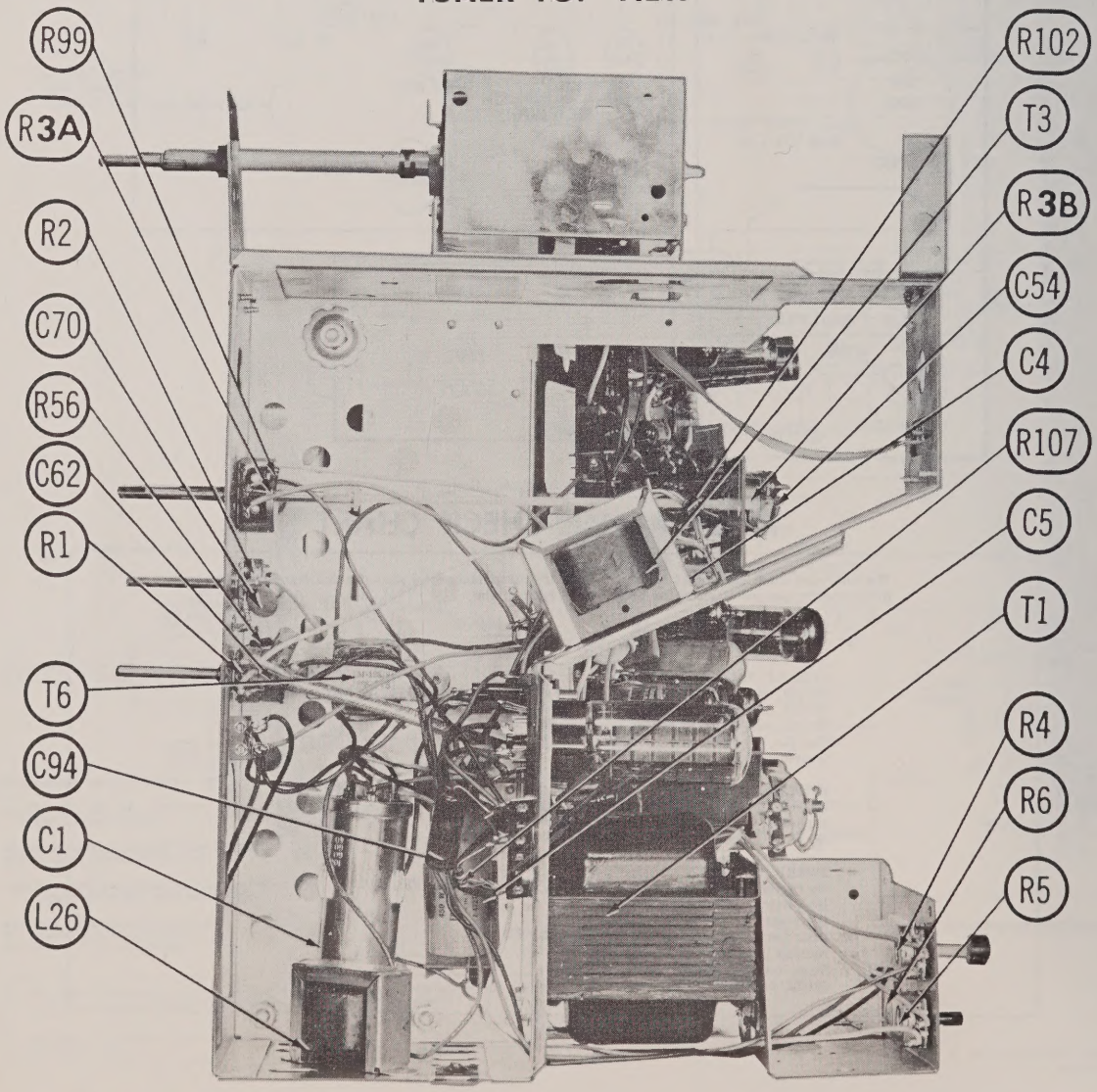
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M3), V6, V9**
No pic, no sound, has snow - **V1, V2, V3, V9**
No pic, has sound, has raster - **V6, V17, V9**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V8**

SYNC FAILURE
No vert. sync - **V10, V9 (V6 some versions)**
No horiz. sync - **V10, V7, V9, (V6 some versions)**
No vert. or horiz. sync - **V10, V9, (V6 some versions)**

SWEEP FAILURE
No raster, has sound - **Fuse (M2), V7, V12, V13, V14, V15, V17**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V16**
Vert. off freq. - **V11**
Horiz. off freq. - **V12**



TUNER TOP VIEW



CHASSIS BOTTOM VIEW

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DENVER, COLORADO

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru 21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (02 Line)

CAPACITOR IDENTIFICATION

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set the volume control fully counter clockwise.
Set the contrast control fully clockwise.
Connect the negative lead of 3 volt bias supply to point Ⓐ. Positive to chassis.
Remove the horizontal output tube (V13) to reduce shock hazards.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
If a slug has two peak positions, use the one with the slug in the "Out" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V2). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	11	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.	A1, A2	Adjust for MINIMUM amplitude at marker.
2.	"	"	"	41.25MC	"	"	A3	"
3.	"	"	"	42.5MC	"	"	A4	Adjust to place marker at 65% on curve as in Fig. 1.
4.	"	"	"	45.75MC	"	"	A5	Adjust to place marker at 40% on curve as in Fig. 1.
5.	"	"	"	42.5MC 45.75MC	"	"	A6	Adjust for proper tilt and symmetry similar to Fig. 1.
6.	"	"	"	45.75MC	"	"	A7, A8	Adjust for maximum gain at 45.75MC marker.

4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001mfd	High side to point Ⓑ. Low side to chassis.	4.5MC (400∿ AM)	Any non-interfering channel	Vert. Amp. thru detector network (Fig. 2) to pin 7 (cathode) of picture tube. Low side to chassis.	A9	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT

A weak TV signal should be substituted for the signal generator, if possible.
Keep the volume control turned down unless the speaker is connected.
Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01 mfd	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A10, A11	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point Ⓔ. Common to point Ⓓ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Set the fine tuning two-thirds turn from the counter clockwise stop and leave it in this position.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 3	Across antenna terminals thru matching network (Fig. 3).	213MC	211.25MC	13	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 45%.
			207MC	205.25MC	12		A14	
			201MC	199.25MC	11		A15	
			195MC	193.25MC	10		A16	
			189MC	187.25MC	9		A17	
			183MC	181.25MC	8		A18	
			177MC	175.25MC	7		A19	
			85MC	83.25MC	6		A20	
			79MC	77.25MC	5		A21	
			69MC	67.25MC	4		A22	
			63MC	61.25MC	3		A23	
			57MC	55.25MC	2		A24	

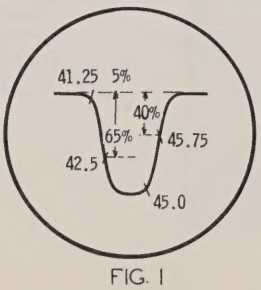


FIG. 1

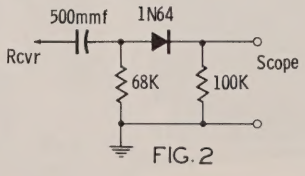
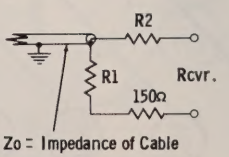


FIG. 2



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (H). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 3	Across antenna terminals thru matching network (Fig. 3).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (F). Low side to chassis.	A25, A26 A27, A28 A29, A30	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown. A29 adjusts bandwidth. A30 controls tilt.
12.	"	"	177MC	175.25MC 179.75MC	7	"	A31, A32	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown. Retouch A25 for maximum gain and equal peaks.
13.	"	"	207MC	205.25MC 209.75MC	12	"		Make compromise adjustments of A25 thru A29 and/or A31 and A32, if necessary. Replace tuner shield when checking response
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			193MC	181.25MC 185.75MC	8			
14.	"	"	85MC	83.25MC 87.75MC	6	"	A33, A34 A35, A36	Adjust for maximum gain and symmetry of response similar to Fig. 6 with markers as shown. Adjust bandwidth by positioning "Gimmick".
15.	"	"	79MC	77.25MC 81.75MC	5	"	A37, A38 A39, A40	Adjust for maximum gain and symmetry of response similar to Fig. 6 with markers as shown.
16.	"	"	69MC	67.25MC 71.75MC	4	"	A41, A42 A43, A44	"
17.	"	"	63MC	61.25MC 65.75MC	3	"	A45, A46 A47, A48	"
18.	"	"	57MC	55.25MC 59.75MC	2	"	A49, A50 A51, A52	"

40MC CHANNEL ALIGNMENT OF TUNER #RJX-110

Connect bias as under "VHF RF and Mixer Alignment".
Disconnect the IF link from L9 and terminate with 68Ω resistor at open end only.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Fig. 7	High side to point (G). thru network (Fig. 7).	43.5MC (10MC Swp)	40.5MC 45.75MC	UHF Tune UHF for MINIMUM tilt over center tuning area.	Vert. Amp. thru 10K to point (F). Low side to chassis.	A53, A54 A55, A56	Adjust A53 for correct placement of 40.5 MC marker. (See Fig. 8). Adjust A54 and A55 for maximum gain and symmetry. Adjust A56 for maximum gain and zero tilt.

VHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

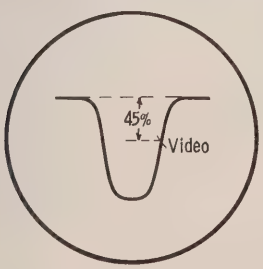


FIG. 4

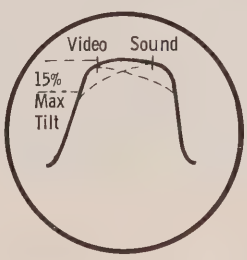


FIG. 5

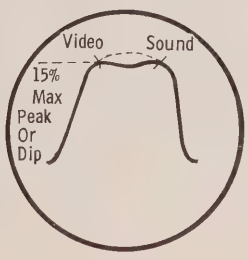


FIG. 6

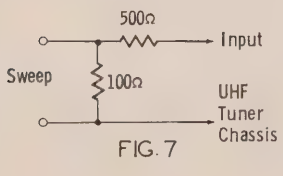


FIG. 7

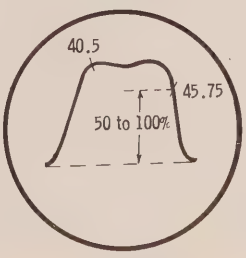
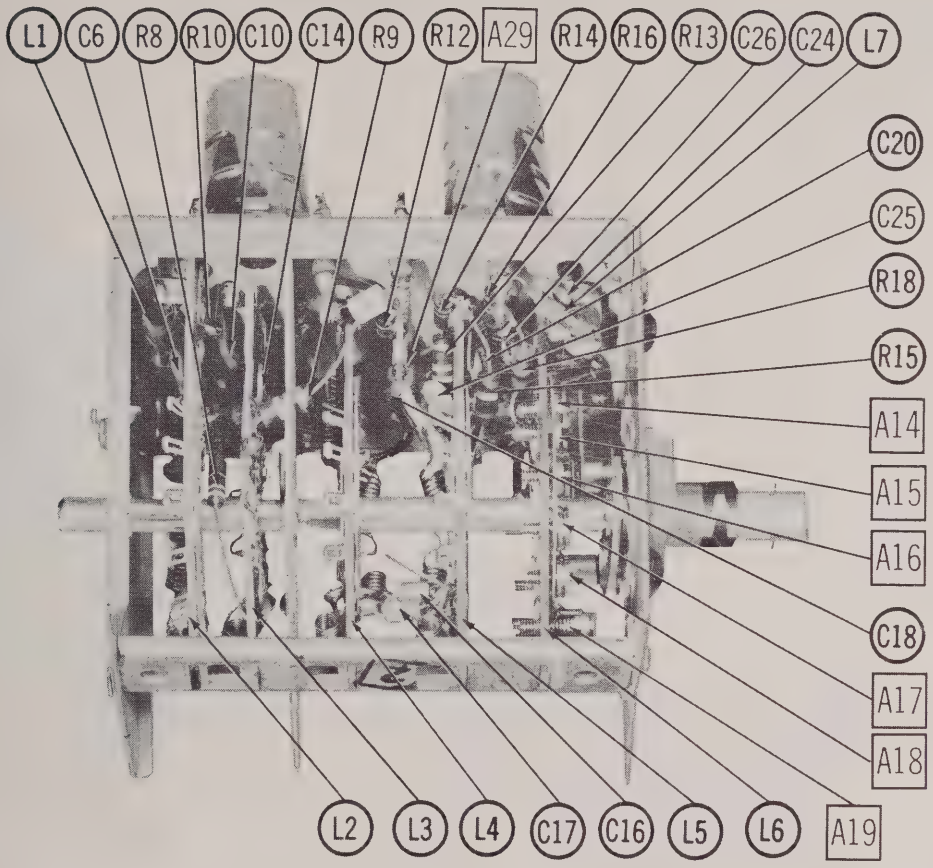


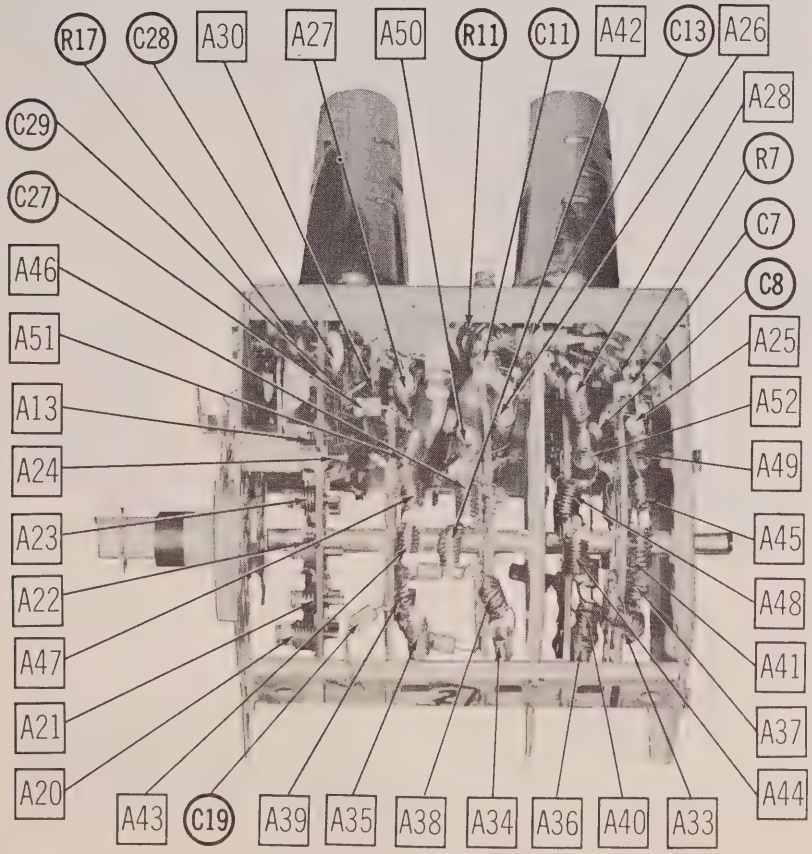
FIG. 8

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru 21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru 21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

FOLDER 1



TUNER-LEFT SIDE

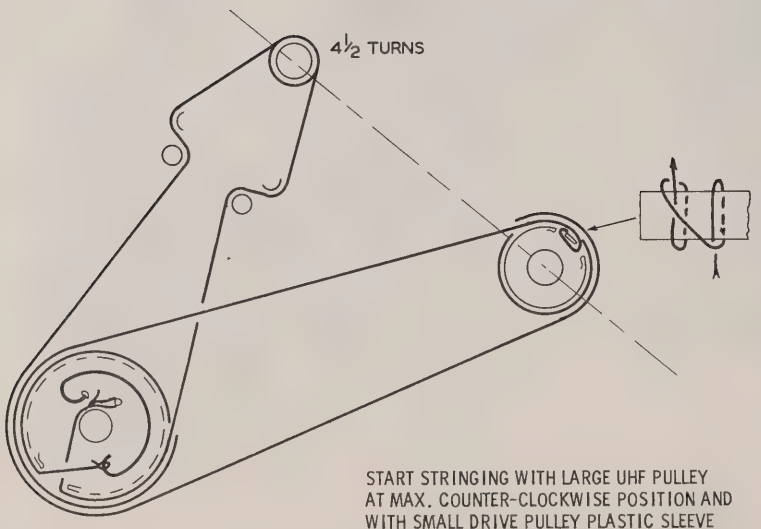


TUNER-RIGHT SIDE

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	† .1Ω	400K	INF	0Ω	.1Ω	INF	10meg	100Ω	0Ω
V2	6U8	■ 10K	175K	■ 10K	0Ω	.1Ω	■ 0Ω	0Ω	0Ω	10K
V3	6CF6	340K	47Ω	.1Ω	0Ω	† 7000Ω	■ 6900Ω	0Ω		
V4	6CF6	350K	47Ω	.1Ω	0Ω	† 7000Ω	■ 6900Ω	0Ω		
V5	6CB6	.1Ω	180Ω	.1Ω	0Ω	† 4900Ω	■1100 Ω	0Ω		
V6	6CX8	0Ω	240K	† 1meg	.1Ω	0Ω	68Ω	1meg	■ 0Ω	† 5100Ω
V7	6BW8	100K	780K	1.3meg	0Ω	.1Ω	2.4Ω	180Ω	■ 3300Ω	■3300Ω
V8	6T8	INF	22K	INF	0Ω	.1Ω	5meg	0Ω	3.3meg	† 470K
V9	6AS5	¶	290K	0Ω	.1Ω	290K	† 12K	† 720Ω		
V10	6BY6	† 2.2meg	0Ω	.1Ω	0Ω	† 47K	■ 18K	3.5meg		
V11	6BL7GT	1.5meg	‡2700Ω	• 1700Ω	• 550K	• ‡4meg	175Ω	0Ω	.1Ω	
V12	6CG7	† 15K	2.3meg	820Ω	0Ω	.1Ω	† 82K	56K	820Ω	0Ω
V13	6DQ6A	0Ω	0Ω	0Ω	• † 8500Ω	820K	NC	.1Ω	0Ω	TOP CAP ‡37Ω
V14	6AX4GT	TP	NC	¶	NC	† 0Ω	TP	0Ω	.1Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡410Ω
V16	5U4GB	NC	¶	NC	37Ω	NC	34Ω	TP	¶	
V17	21DEP4	.1Ω	40K	550K	‡1meg	NC	NC	190K	0Ω	

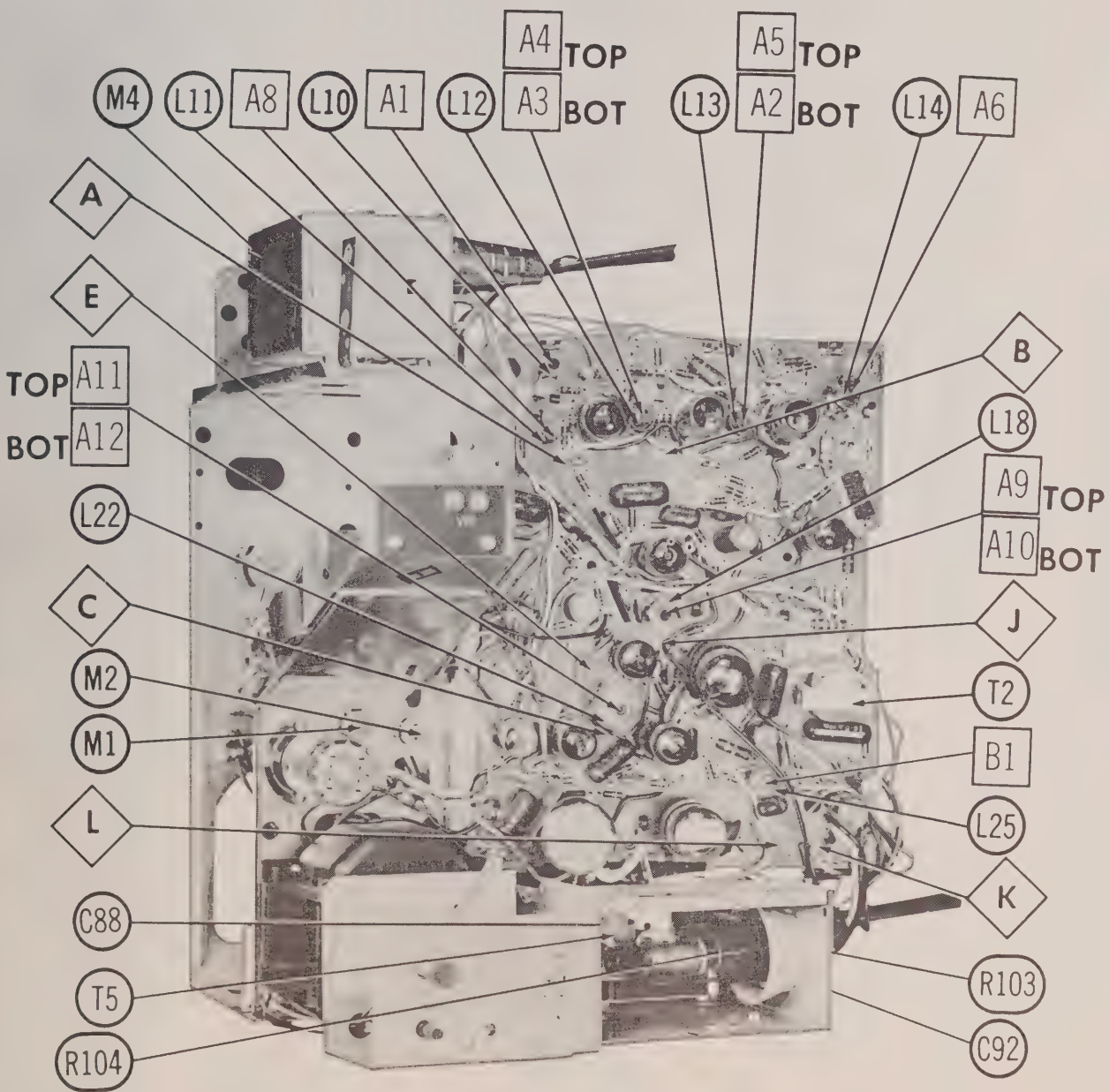
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 280V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
■ MEASURED FROM 135V SOURCE.
NC NO CONNECTION.
TP TIE POINT.



START STRINGING WITH LARGE UHF PULLEY AT MAX. COUNTER-CLOCKWISE POSITION AND WITH SMALL DRIVE PULLEY PLASTIC SLEEVE TAB AT 3 O'CLOCK (VIEWED FROM FRONT OF TUNER)

UHF DRIVE CORD STRINGING

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO



CHASSIS TOP VIEW

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru
21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru
21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. E. BLANKENSHIP
[illegible] MEADE ST.
DENVER, COLORADO

ALTERNATE TUNER SCHEMATIC

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru
21C1556, 21C1560, 21C1562, 21C1564, 21T1539 thru
21T1544, 24C1660, 24C1661, 24C1670, 24C1671 (U2 Line)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6BS8	
V2	Mixer-Oscillator	6U8	
V3	1st Video IF Amp	6CF6	
V4	2nd Video IF Amp	6CF6	
V5	3rd Video IF Amp	6CB6	
V6	Video Output-Noise Cancelling Control	6CX8	Note 1
V7	Sound IF Amp--Horiz. AFC Ratio Det.--AF Amp--AGC Clamper	6BW8	
V8		6T8	

ITEM No	USE	TYPE	NOTES
V9	Audio Output	6AS5	
V10	Sync Sep.	6BY8	
V11	Vert. Osc.--Vert. Output	6BL7GT	
V12	Horiz. Mult.	6U8	
V13	Horiz. Output	6DQ6A	
V14	Damper	6AX4GT	
V15	HV Rectifier	1B3GT	
V16	LV Rectifier	5U4GB	

Note 1. In chassis stamped EN-69 or higher a 1B3TTA is used to replace the video output and the triode section for the noise cancellor control is discontinued. NOTE: These tubes are not interchangeable

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	G. E. PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V17	21DEP4 ① ② 21DZP4 ② 24ALP4	21DEP4 ② 21ZP4 ② 24ALP4 ②	21DEP4 ②	① Manufacturer recommends replacing with a 21CEP4 and ion trap (Part #RET-617). ② Aluminized ③ Silver screen "66"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	G.E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	480	350	RCE-324	AFH4-99-80	DD789 4	FP419.67	TMQ-135		R2256 *
B	240	350							
C	480	300							
D	60	75							
C2	200	4	RCE-272	PRS8V100	BBR100-6	TT52X100	TD-100-6	MTH-0610	TVA-1101
C3	4	50	RCE-238	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1402
C4A	60	300	RCE-271	PR3-025	BR6025			MTH-4530	R2482 *
B	10	200			BR645			MMT-4505	
C5	60	450	RCE-233		BR4045	TC78	TD-40-450	MT-4540	TVA-1712

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	7.5		RCW-3279			C10V75C				NPO ①
C7	33		RCW-3308		TCZ-33	C10N33C	TCO-33	ZT-5433	5TCC-Q33	5% ②
C8	3.3		RCK-332	NPO-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	5%
C9	1000		RCW-3127	EF-001	MFT-1000				503C-D1	
C10	330		RCW-3357		D6-331	L10T33	ED-330		MS-333	10%
C11	800		RCW-3337	BPD-0008	D8-801	L10T8	ED-0008		5GA-T8	
C12	3-3		RCT-180		529-3		3115-D	CT565A		
C13	1000		RCW-3117	EF-001	MFT-1000				503C-D1	
C14	13		RCW-3139		TCZ-12	C10C13C	TCO-13			5%
C15	1000		RCW-3117	EF-001	MFT-1000				503C-D1	
C16	1.8		RCK-017	NPO-SI 1.8		C10V15C				10%
C17	1.5		RCK-030	NPO-SI 1.0	TCZ-1	C10V15C	TCO-1			10%
C18	47		RCW-3297							N1500 5%
C19	1.8			NPO-SI 1.5		C10V15C				
C20	10000		RCW-3304	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-01	
C21	5-2		RCT-089		529-3		3115-D	CT565A		
C22	1000		RCW-3117	EF-001	MFT-1000				503C-D1	
C23	1000		RCW-3117	EF-001	MFT-1000				503C-D1	
C24	1000		RCW-3245	BPD-001	DD-103	BYA501	ED-1000	DC511	5HK-D1	
C25	28		RCW-3328		TCN-28	C10Q28U	TCT-28		5TCC-Q28	N750 5%
C26	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C27	91		RCK-021		TCZ-91		TCO-91			10%
C28	10		RCW-3362							N470 5%
C29	9		RCW-3362							N330 ± .25mmf
C30	1000		RCW-3117	EF-001	MFT-1000				503C-D1	
C31	18		RCG-019		TCZ-18					NPO 5%
C32	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C33	15	300	RCC-164		P268N-15	CUB2P15		GEM-3015	5HK-P15	
C34	800		RCW-3037						5GA-T8	
C35	680		RCW-3332		D6-681	1R5T68	ED-680		MS-366	10%
C36	66				TCZ-66		TCO-66		5TCC-Q66	NPO 5%
C37	900		RCW-3027							
C38	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C39	330		RCW-3357		D8-331	L10T33	ED-330		MS-333	10%
C40	91		RCW-3027		TCZ-91		TCO-91			NPO 5%
C41	800		RCW-3037							
C42	680		RCW-3362			1R5T82	ED-820		MS-382	10%
C43	1200		RCW-3187			1R5D12	ED-1200		MS-312	10%
C44	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C45	800		RCW-3037							
C46	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C47	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C48	800		RCW-3037	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C49	3		RCW-3286	NPO-DI 3.0		C10V3C	TCO-3	ZT-553		NPO
C50	5	500	RCW-3057		TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V47	NPO 5%
C51	.047	200	RCC-167	P268N-047		CUB2P47		GEM-3047	5TM-P47	
C52	3000		RCW-3014	BPD-005	DD-503	BYA10D5	ED-005	DC535	5HK-D5	
C53	33		RCW-3332	NPO-DI 33	TCZ-33	C10Q33C	TCO-33	ZT-5433	5TCC-Q33	NPO 10%
C54	47		RCW-3352	NPO-DI 47	TCZ-47	C10Q47C	TCO-47	ZT-5447	5TCC-Q47	NPO 10%
C55	18	600	RCC-166	P268N-15		CUB4P15		GEM-4015	4TM-P15	
C56	30000		RCW-3044	BPD-03	DD-303	BYB501	ED-02		5HK-D3	
C57	33	300	RCC-165	P268N-33		CUB2P33		GEM-3033	5TM-P33	
C58	5000		RCW-3024	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C59	30		RCW-3350		TCZ-30		TCO-30	ZT-542	5TCC-Q2	NPO 5%
C60	1000		RCW-3123			BR5DL	ED-1000	MCB255	MS-31	10%
C61	5000		RCW-3024	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	③
C62	015	200	RCC-136							10%
C63	10000		RCW-3196	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-01	
C64	10000		RCW-3196	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-01	
C65	10000	1000	RCW-3532	DAC-37		BYA10D1			5HL-S10	
C66	5000		RCW-3014	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C67	10000		RCW-2186	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-01	
C68	1300		RCW-3187			1R5D13	ED-1300		MS-312	10%
C69	015	600	RCC-068							10%
C70	3000		RCW-3016	BPD-002	DD-303	BYA10D3	ED-002	DC523	5HK-D2	
C71	.1	600	RCC-161	P268N-1	DF-104	CUB4P1		GEM-601	4TM-P1	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C72	033	400	RCB-038							10%
C73	033	400	RCC-142	P488N-1	DF-104	CUB4P4		GEM-401	4TM-P4	
C74	01	1000	RCB-022							10%
C75	033	1000	RCB-021							10%
C76	68		RCW-3354	N750-D1 68	TCN-68	C10Q68U	TCT-68		STCU-Q68	N750 10%
C77	56		RCW-3353		TCN-56	C10Q56U	TCT-56			N750 10%
C78	1200		RCW-3187			1R5D13	ED-1300		MS-313	10%
C79	680		RCW-3331		D6-681	1R5T68	ED-680		MS-366	10%
C80	5000		RCW-3174	BPD-006	DD-502	BYA10D6	ED-005	DC525	5HK-D5	
C81	100	300	RCC-141	P268N-1	DF-104	CUB2P1		GEM-301	2TM-P1	
C82	0056	600	RCC-143					GEM-16565		10%
C83	1000		RCG-004	1464-001		1R5D1	CY30C102J	MCE255	MS-31	5%
C84	820		RCW-3368			1R5T82	ED-820			10%
C85	5000		RCW-3014	BPD-006	DD-502	BYA10D6	ED-005	DC525	5HK-D5	
C86	1	400	RCC-146	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C87	470	1000	RCW-3265	HVD-15-470	DD30-47I	BYA10Y47	HD15-470	DC30347	5GA-T47	
C88	150	3000	RCW-3355							10% ④
C89	056	600	RCN-064							10% ⑤
C90	210	4000	RCW-3356							10% ③
C91	1000	1000	RCW-3321	DAC-37		BYA10B1			BL-810	
C92	27	200		P268N-35		CUB2P27		GEM-3027	2TM-P25	①
C93	5000		RCW-3014	BPD-006	DD-502	BYA10D6	ED-005	DC525	5HK-D5	
C94	047	600	RCW-053	P268N-047	DF-503	CUB4P47		GEM-6147	6TM-S47	

① Early production uses 6.8mmf 5% (Part #RCW-3337) in this application.
② Early production use 47mmf 5% (Part #RCW-3397) in this application.
③ Some versions may use 360mmf @ 4000V in this application.
④ Not used in some versions.
⑤ In some versions this is part of a component combination (Part #RCE-004).

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	RCC-435	ABT-64	A47F2-500K		UDT-431	Volume- Tap @ 200K
B	Shaft			AK-8	R8-3/8		DB-3T	
C	Switch			KB-1	SWE-12		UB-26	
R2A	300K	½	RCC-434	AB-52	A47-300K-S	QU-131	U46	Vert. Hold
B	Shaft			AK-8	R8-3/8	NQ	DB-3T	
R3A	15K	2(WW)	RCC-433					Brightness
B	17K	½	RCC-432					Contrast - Tap @ 6000Ω
R4A	1meg	½	RCC-301	B-69	A47-1meg-S	QU-127	TA16L	Horiz. Hold
B	Shaft			Not Req.	KB8-3	Not Req.	Not Req.	
R5A	3meg	½	RCC-301	B-84	A47-3meg-S	QU-140	SU-59	Height
B	Shaft			Not Req.	F3H-1-4	TQ	Not Req.	
R6	3000Ω	2(WW)	RTC-305		39-3000			Vert. Linearity

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R7	10K			
R8	3300Ω			
R9	330K			
R10	100Ω			
R11	820K			
R12	820K			
R13	4700Ω			
R14	22K			
R15	150K			
R16	10K			
R17	10K			
R18	10K			
R19	2.2meg			
R20	5600Ω			
R21	33Ω			
R22	6800Ω	2		
R23	1800Ω			
R24	47Ω			
R25	10K			
R26	6800Ω	2		
R27	6800Ω			
R28	47Ω			
R29	22K			
R30	4700Ω			
R31	2200Ω			
R32	1000Ω			
R33	100Ω			
R34	180Ω			
R35	3300Ω 5%			
R36	8200Ω			
R37	82K		Note 1	
R38	240K 5%		Note 2	
R39	100K		Note 3	
R40	3.9meg			
R41	1meg		Note 3	
R42	5100Ω	7	RRW-176	Note 4
R43	3300Ω			Note 5
R44	68Ω			Note 6
R45	180K			
R46	180K			
R47	100K 5%			
R48	56K 5%			
R49	1meg			
R50	820K			
R51	1.5meg			
R52	3300Ω			
R53	180Ω		Note 7	
R54	220Ω			
R55	22K			
R56	33K			
R57	22Ω			

ITEM No	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R58	3.3meg			
R59	470K			
R60	560K 5%			
R61	620K 5%			
R62	12K			
R63	330Ω	1		
R64	120Ω			
R65	22meg			Note 8
R66	18meg 5%			Note 8
R67	1meg			Note 8
R68	1.2meg			
R69	22K			
R70	47K	1		
R71	33K	1		
R72	33K	1		
R73	18K	1		
R74	3.3meg 5%			
R75	2.2meg			
R76	20meg 5%			Note 9
R77	390K			
R78	1.5meg			Note 10
R79	1.5meg			
R80	5600Ω			
R81	1000Ω	1		
R82	4700Ω			
R83	2200Ω			
R84	2200Ω			
R85	560K 5%			
R86	1meg			
R87	680K			
R88	100K			
R89	82K			
R90	15K	1		
R91	56K 5%			
R92	1meg			
R93	82K			
R94	15K			
R95	620Ω 5%			
R96	100Ω			
R97	620K			
R98	2200Ω	3	RRW-178	
R99	10K			
R100	7500Ω 5%	3	RRW-174	
R101	12K 5%	4	RRW-177	
R102	1meg-Cold 500K-Hot		RRW-175	
R103	680Ω	1		Note 8
R104	3.9Ω	1	RBR-003	Note 12
R105	470K	1		
R106	330K	1		
R107	470K			

Note 1. Some versions may use 68K in this application.
Note 2. Some versions may use 220K 5% in this application.
Note 3. Some versions may use 330K in this application.
Note 4. Some versions may use 4200Ω 10W (Part #RRW-182) in this application.
Note 5. Some versions may use 8800Ω in this application.
Note 6. Some versions may use 15Ω in this application.
Note 7. In some versions this is part of a component combination (Part #RCR-004).
Note 8. Not used in some versions.
Note 9. Some versions may use 22meg 5% in this application.
Note 10. Some versions may use 1.8meg in this application.
Note 11. Some versions may use 4.7Ω 1W (Part #RRW-098) in this application.

TRANSFORMER (POWER)

ITEM No	RATING				REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	G. E. PART No.	Halldorson PART No	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	
T1	117V ± 1.7A	580VCT ± 240A	5V ± 3A	25V tap @ 6.3V ± 2.2A	RTP-339						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		G. E. PART No	Halldorson PART No	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Osc.	RTO-215	B6705 1 2	A-3004 1 2	V404 1 2	A-8126 1 3	28A02 1 3	A-12G2 1 3	
T3	Vert. Output	RTO-216		MDF-108					
T4A	Yoke-Horiz. (13.8kHz)	RLD-080							
B	(15.75-Vert. (43Hz))								
T5	Horiz. Output	RTO-214-11		HVO-168		HVO-166			
	Alt. Horiz. Output	RTO-214		HVO-166					

① Connect as autoformer.
② Connect yellow lead to junction of capacitor (C69) and resistor (R73), blue lead to pin 6 of V11. Connect red lead and green lead to ground.
③ Connect green lead to junction of capacitor (C69) and resistor (R73), red lead to pin 6 of V11. Connect blue lead and yellow lead to ground.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	5000Ω	3-4Ω	RTO-217	Z1003	A-3019	A-8093	28S49	S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G.E. PART No	QUAM PART No.	
SP1	4"	PM	3-4Ω	ROP-039①	4A0T.	① Used in Models 21C1546 thru 1556, 1563, 21T1540 thru 1544, 24C1680, 1681, 1670, 1671
	8"	PM	6-8Ω	ROP-045②		② Used in Models 21C1545, 1545, 1552 thru 1556,1563, 24C1670, 1671 (Two used).
	6"	PM	3-4Ω	ROP-044③		③ Used in Models 21C1550, 1551, 24C1660, 1661

COILS (RF-IF)

ITEM No.	USE	G. E. PART No.	NOTES
L1	VHF Ant. Trans.	RLA-050 *	
	VHF Ant. Trans.	RLA-053 ▲	
L2	Ant. Coils	RSX-128 *	Channel 2-13, Wafer Assy.
	Ant. Coils	RSX-133 ▲	Channel 2-13, Wafer Assy.
L3	RF Coils	RSX-132	Channel 2-13, Wafer Assy.
L4	RF Interstage Coils	RSX-134 *	Channel 2-13, Wafer Assy.

ITEM No.	USE	G. E. PART No.	NOTES
L5	RF Interstage Coils	RSX-135 ▲	Channel 2-13, Wafer Assy.
L6	Mixer Grid Coils	RSX-123	Channel 2-13, Wafer Assy.
L6	Osc. Coils	RSX-121	Channel 2-13, Wafer Assy.
L7	RF Choke	RLJ-390	
L8	Mixer Plate Coil	RLJ-403	

ITEM No	USE	REPLACEMENT DATA				NOTES
		G.E. PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L9	IF Link Shunt	RLJ-438			4880		.1 Microvery Includes Cap.
L10	47.25MC Trap	RLJ-441					
L11	1st. Video IF	RLJ-381					
L12	2nd. Video IF	RTL-220					Includes 41.25MC Trap
L13	3rd. Video IF	RTL-219					Includes 47.25MC Trap
L14	4th. Video IF Assy.	RTL-218					Includes coils, caps, M3
L15	RF Choke	RLJ-340	19-1004	BC-565	4609		5.6 Microhenries, IRC Part #CLA
L16	Shunt Peaking Coil	RLJ-194	19-3300	TV-200	6132	VP-7	330 Microhenries
L17	Series Peaking Coil	RLJ-382	19-3100	TV-195	6131	VP-6	110 Microhenries
L18A	4.5MC Trap	RLJ-440					
B	Sound IF						
L19	Shunt Peaking Coil	RLJ-342	19-3680	TV-206	6148		680 Microhenries-Note 1
L20	Shunt Peaking Coil	RLJ-343	19-3680	TV-206	6148		680 Microhenries-Note 2
L21	Series Peaking Coil	RLJ-383	19-4201	TV-197	6154	VP-8	300 Microhenries
L22	Ratio Det.	RTJ-032		TV-147			Includes cap and resistor
L23	RF Choke	RLJ-153	19-1005	BC-566	4613		10 Microhenries, IRC Part #CL-1
L24	RF Choke	RLJ-153	19-1005	BC-566	4612		10 Microhenries IRC Part #CL-1

Note 1. Chassis stamped "EN-69" or higher use part #RLJ-451 (560 Microhenries) in this application.
Note 2. Chassis stamped "EN-69) or higher use part #RLJ-452 (910 Microhenries) in this application.
* Used in early production.
▲ Used in later production

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA					NOTES
	PRI.	SEC.	G.E. PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L25	70Ω		RLJ-439 ①						① Alternate part #RLJ-456

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (D. CURRENT .1000 "A)	G.E. PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L26	.340A	54Ω	1.3 Hy.	RLF-080	C8040	C-2976 ①	C-3327	36C41		C-24X

① Drill new mounting hole.

GENERAL ELECTRIC MODELS 21C1545, 21C1547 thru 21T1547, 21C1550, 21C1552, 21C1554, 21T1550 thru 21T1554, 24C1640, 24C1660, 24C1670, 24C1677 (G2 Line)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA	
K1	De-emphasis	1000mmf, 15000mmf, 4000mmf, 27K	REK-022	Sprague	PB-3
K2	Sync Peaking	470mmf, 470K	RCR-003	Centralab Sprague	RC-465 R-9176

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	4A 125V S/B	REF-034	RJB-089	333004. (N 4A 125V S/B)	346019	N4	HN 3½ to 5
M2	N	4/10A 250V S/B	REF-035	RJB-090	333.400 (N 4/10A 250V S/B)	364009	N 4/10	HN 3/10 to ½

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		G. E. PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N87	RED-001	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M4	Tuner	RJX-109	VHF - 12 position, VHF Models
	Tuner	RJX-110	VHF - 13 position, UHF models
	Tuner	RUX-022	UHF - Used with VHF tuner RJX-110 in UHF models
M5	Centering Device	REA-019	
	Ion Trap	RET-017	Used with 21CZP4. Part #RET-018 used with some versions using 21DEP4
	Yoke Clamp	RMC-072	
	Motor	RBH-023	Power tuning, includes gears

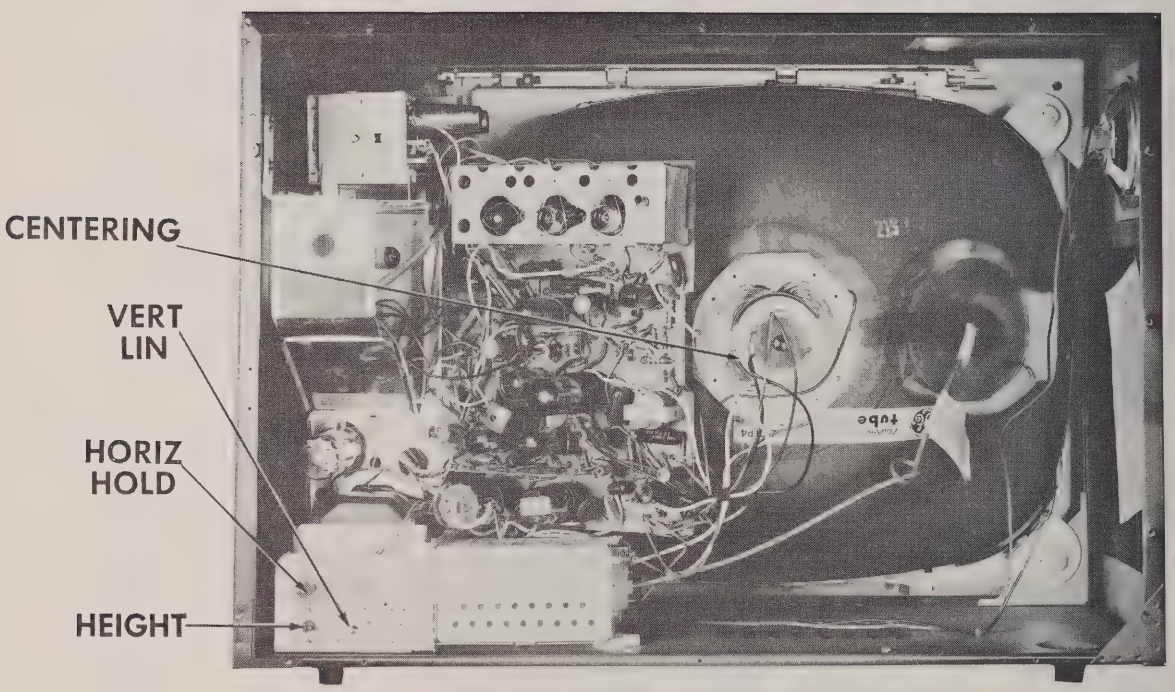
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	RDW-128	21" Models
Safety Glass	RDW-132	24" Models
Mask	RDM-079	Includes knob, escutcheon & island - Models 21C1548 thru 1556, 1562, 21T1540
Mask	RDM-080	Includes knob, escutcheon & island - Models 21T1541 thru 1544
Mask	RDM-083	Includes knob, escutcheon & island - 24" Models
Knob	RDK-651	VHF Tuning (Non-power tuning models)
Knob	RDK-654	VHF Selector (Non-power tuning models)
Knob	RDK-652	UHF Selector
Knob	RDK-649	UHF Indicator
Knob	RDK-650	Contrast
Knob	RDK-653	Volume, vertical
Knob	RDK-655	Brightness
Leg	RAL-037	Model 21C1548 (Polished brass, flat foot)
Leg	RAL-038	" " (Brushed brass, rounded foot)
Leg	RAL-039	" 21C1549 (Polished brass, flat foot)
Leg	RAL-040	" " (Brushed brass, rounded foot)
Leg	RAL-032	" 21C1550 (Polished brass, flat foot)
Leg	RAL-035	" " (Brushed brass, rounded foot)
Leg	RAL-033	" 21C1551 (Polished brass, flat foot)
Leg	RAL-036	" " (Brushed brass, rounded foot)
Foot	RHF-021	Models 21T1540 thru 1544
Foot	RHF-028	Models 21C1548 thru 1551, 1553 (Polished brass, flat foot)
Foot	RHF-029	" " " " " (Brushed brass, rounded foot)

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead from point ⟨J⟩ to chassis.

Shunt the horizontal frequency coil by connecting a 1000Ω resistor from point ⟨K⟩ to point ⟨L⟩. Adjust the horizontal hold control until the picture appears to flat back and forth across the screen.

Remove the 1000Ω shunt and adjust the horizontal frequency slug (B1) until the picture again appears to float back and forth across the screen. Remove the clip lead between point ⟨J⟩ and chassis.

PHOTOFACT* Folder
*TRADE MARK

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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

OLYMPIC
MODEL 1TY95L (Ch. DY)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the front.

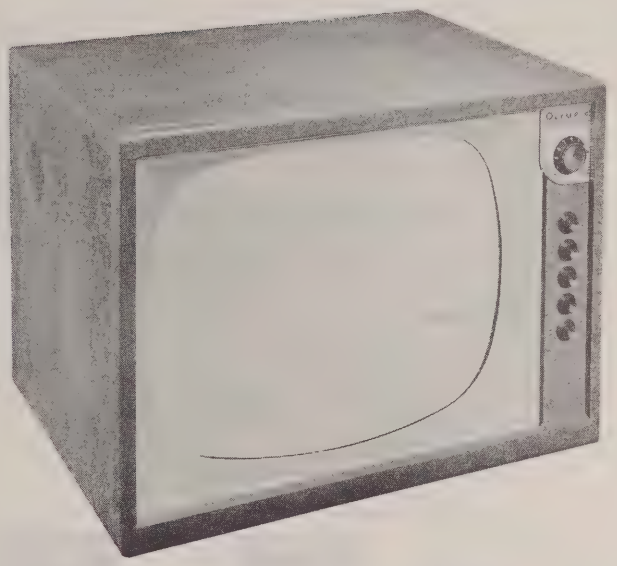
2. Remove 2 screws from the rear cover. Remove the rear cover.

3. Remove the picture tube socket, HV lead, yoke plug and speaker leads.

4. Remove 1 chassis bolt from the upper rear corner of the chassis.

5. Remove 2 chassis bolts from the bottom.

6. Remove the chassis.



OLYMPIC
MODEL 1TY95L (Ch. DY)

TRADE NAME	Olympic Model 1TY95L (Ch. DY)
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th. Ave., Long Island City 1, N.Y.
TYPE SET	Television Receiver
TUBES	Thirteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 140 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 2 o'clock, and should be adjusted first. The LOW band adjustments are located at 10 o'clock for channels 6, 4 and 2. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding the trim strip at the top edge of the safety glass. Remove trim, tilt glass out at the top and lift up to remove.

FOCUS

Adjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H378

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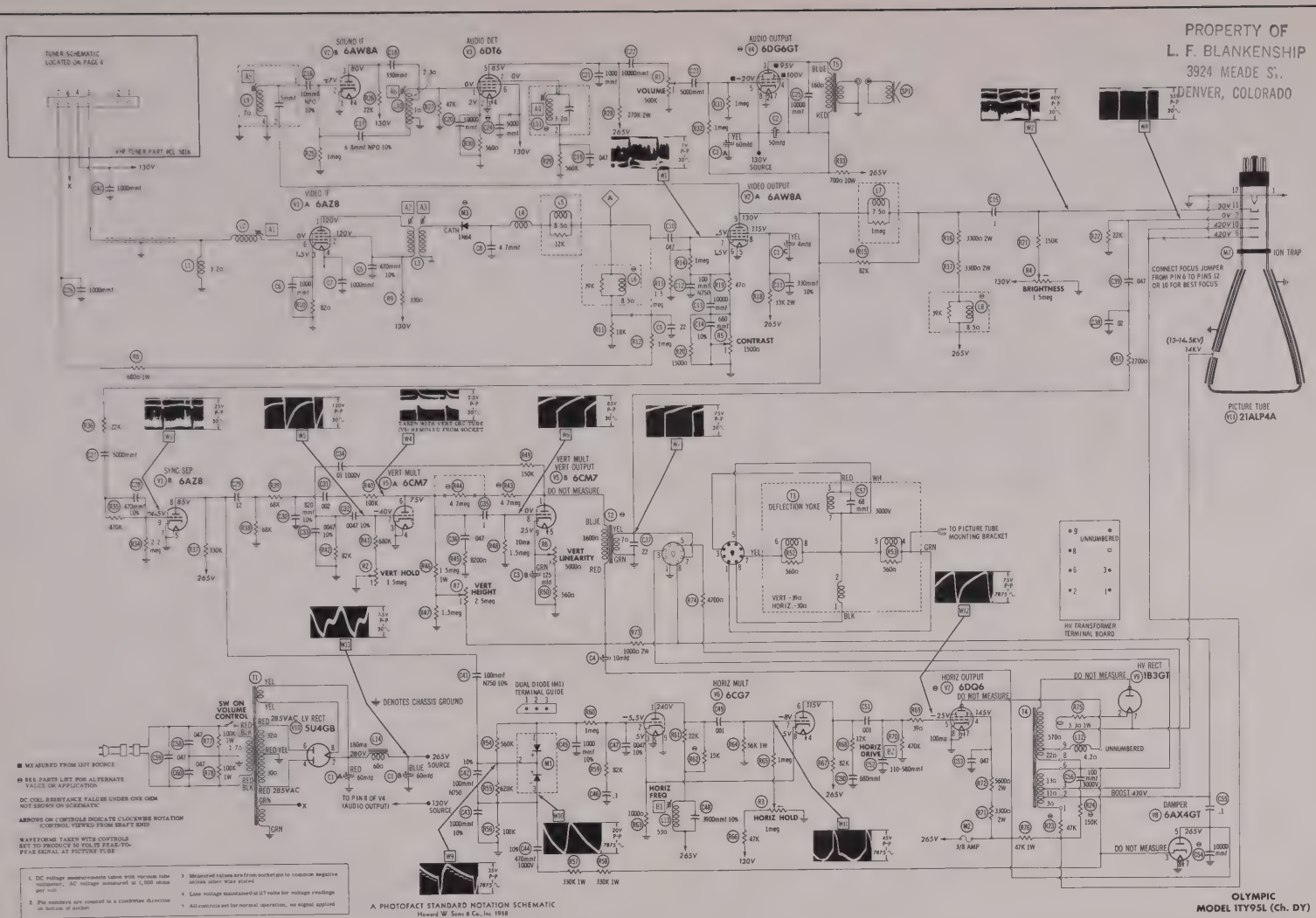

■ MEASURED FROM 130V SOURCE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured on 1,000 ohms per volt
2. Pin numbers are counted in a clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless other wise stated
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUBE PLACEMENT CHART

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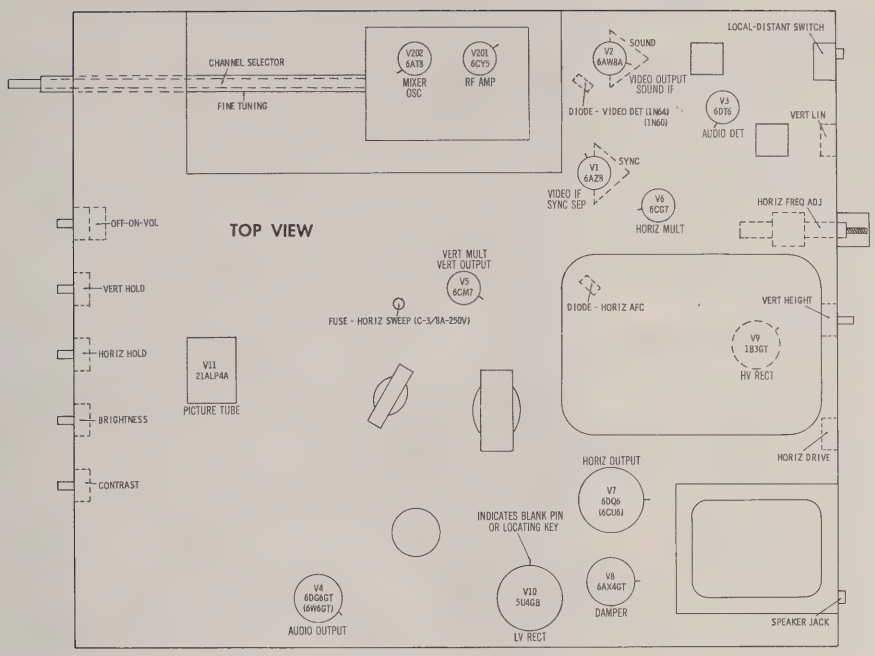


TUBE FAILURE CHECK CHART

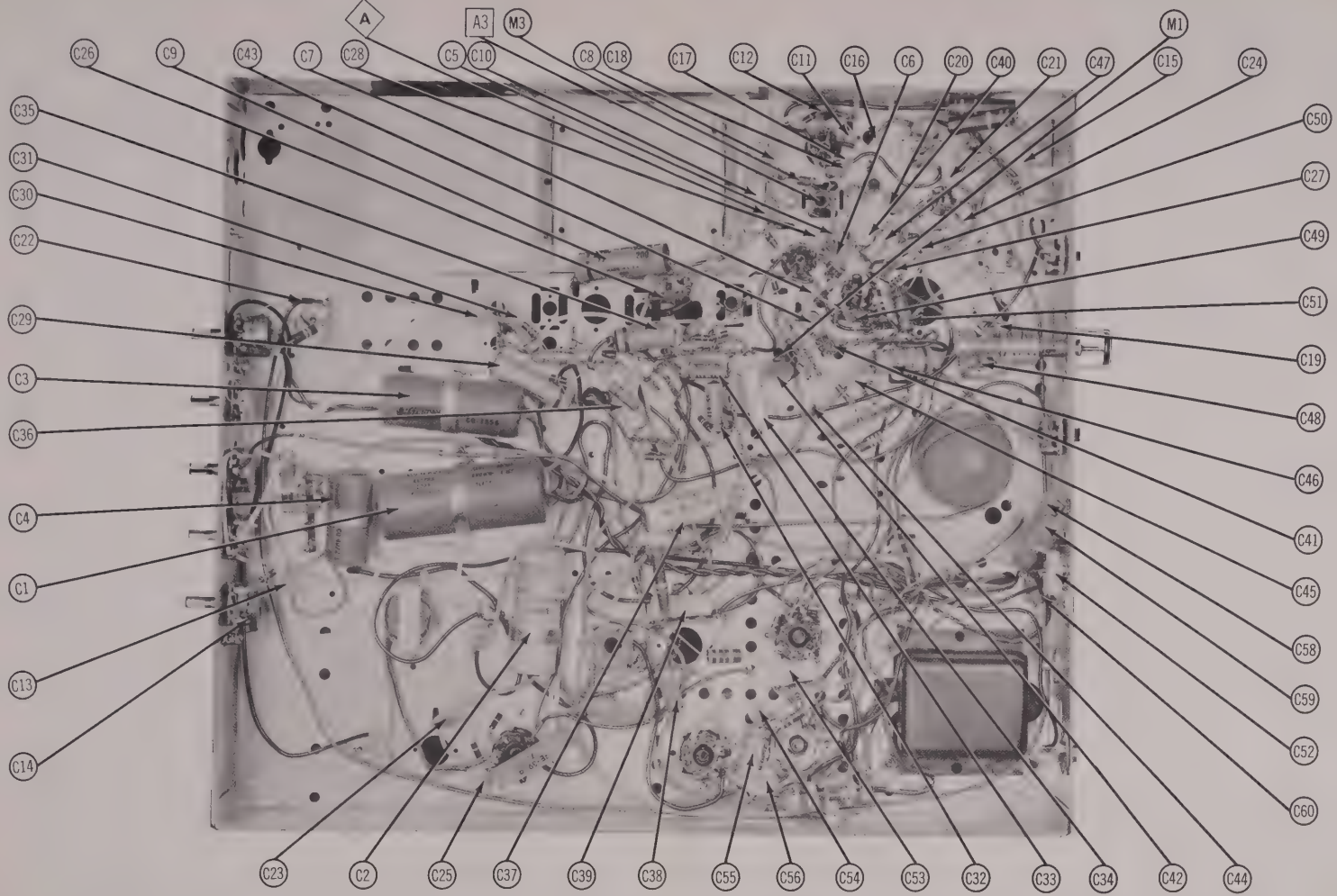
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V10, V4**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, Diode (M3), V2, V4**
No pic, no sound, has snow - **V201, V202, V4**
No pic, has sound, has raster - **V2, V11**
Has pic, no sound - **V2, V3, V4**

SYNC FAILURE
No vert. sync - **V1**
No horiz. sync - **V1, Rectifier (M1)**
No vert. or horiz. sync - **V1**

SWEEP FAILURE
No raster, has sound - **Fuse (M2), M1, V6, V7, V8, V9, V4**
No vertical deflection - **V5**
Poor vert. linearity or foldover - **V5**
Poor horiz. linearity or foldover - **V6, V7, V8, V4**
Narrow picture - **V6, V7, V8, V10, V4**
Vert. off freq. - **V5**
Horiz. off freq. - **V6**



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	Video IF Amp -Sync Sep	6AJ8	
V2	Video Output-Sound IF Amp	6AW8A	
V3	Audio Det	6U7G	
V4	Audio Output	6JC8/G7	6W8GT *
V5	Vert. Mult -Vert Output	6U8T	

ITEM No	USE	TYPE	NOTES
V6	Horiz. Mult	6CU7	
V7	Horiz. Output	6DQ8	
V8	Damper	6AX4GT	
V9	HV Rectifier	1B3/T	
V10	LV Rectifier	5U4GB	

* Alternate

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V11	ELALP4A	ELALP4-B ELALP4A 1 ELALP4	ELALP4-B ELALP4-A 2	ELALP4A ELALP4B 3	1 Aluminized 2 Silverama 3 Silver screen 85°

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	OLYMPIC PART No	AEROVOX PART No	CORNELL DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	60	350	CO-3380	PRS-035	BBR70235	WT630	TMD-44 TD-4-450	D-190 FM-4540	R2510 *
B	60	350							
C	40	350							
C2	50	250	CO-2068-1	PRS250V50	BR5025	TC59	TD-50-450	S-145	TVA-1713
C3A	60	300	CO-3856	EEU-25	BBRD0576	WD340	TMQ-117	S-150	R3084 *
B	125	50						FM-05100	
C4	10	450	CO-4022	PRS450V10	BR1045	TC72	TD-10-450	FM-4510	TVA-1705

* Not-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA								NOTES
	CAP	VOLT	OLYMPIC PART No	AEROVOX PART No	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No	MALLORY PART No	SPRAGUE PART No		
C5	470		CCD-471M			D6-471	BYA307T47	ED-470		MS-347	10%
C6	1000		CC04827	BPD-001		DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C7	1000		CC04827	BPD-001		DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C8	4 †		CC0083	NPO-S1 4..7		TU2E-4R7	UOV47C	TCO-4 7	ZT-5847	STCCB-V47	
C9	22	200		P288N-22			CUB2P22		GEM-2022	47M-P22	
C10	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47	
C11	330					D6-331	L10T33	ED-330		MS-332	10%
C13	100		CCD01H	NT80-DI 100		TCN-100	C10T1L	TCT-100	NT-531	STCU-T1	NT80
C13	10000		CCD03X	BPD-01		DD-103	BYA6D1	ED-01	DC511	5HK-D1	
C14	680			1454 -00068		D6-681	URS76S	ED-680		MS-368	10%
C15	1	400		P488N-1		DF-104	CUB4P1		GEM-401	47M-P1	
C16	10		CCD-100K	NPO-DI 10		TCZ-10	C10QC	TCO-10	ZT-541	STCC-Q8	NPO 10%
C17	5 8			NPO-D1 6 8		TCZ-6R8	C10V58C	TCO-6 8	ZT-5568	STCCB-V68	NPO 10%
C18	330		CCD-331M	BPD-00033		DD-331	L10T33	ED-330	UC-5333	5HK-D1	
C19	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47	
C20	10000		CCD03X	BPD-01		DD-103	BYA6D1	ED-01	DC511	5HK-D1	
C21	1000		CC04827	BPD-001		DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C22	10000		CCD03X	BPD-01		DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C23	5000		CCD-502X	BPD-005		DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C24	5000		CCD-502X	BPD-005		DD-502	BYA10D5	ED-005	DC525	5HK-D5	1
C25	10000		CCD03X	BPD-01		DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C26	1000			BPD-001		DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C27	5000		CCD-502X	BPD-005		DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C28	470		CCD-471M			D6-471	ERS747	ED-470		MS-347	10%
C29	.12	400									
C30	820						IRS76S		ED-820		MS-383	10%
C31	.002	800		P688N-002		DS-202	CUB6S2		GP-2000	GEM-632	9TM-D2
C32	.0047	600								GEM-16347	10%
C33	.0047	600								GEM-16347	10%
C34	01	1000		P1088N-01		DD6E-103	CUB1S01			GEM-1011	10TM-S1
C35	1	400		P488N-1		DF-104	CUB4P1			GEM-401	47M-P1
C36	.047	400		P488N-047		DF-503	CUB4S47			GEM-4147	47M-S47
C37	22	200		P288N-22			CUB2P22			GEM-3022	27M-P22
C38	02	400		P488N-03		DD-303	CUB4S3	ED-02		GEM-413	47M-S3
C39	.047	400		P488N-047		DF-503	CUB4S47			GEM-4147	47M-S47
C40	1000		CC4827	BPD-001		DD-103	BYA6D1	ED-1000	DC521	5HK-D1	
C41	100			NT80-DI 100		TCN-100	C10T1L	TCT-100	NT-531	STCU-T1	NT80 10%
C42	100			NT80-DI 100		TCN-100	C10T1U	TCT-100	NT-531	STCU-T1	NT80 10%
C43	1000						IRS2L	ED-1000	MCB2S5	MS-2L	10%
C44	470	1000									10%
C45	1000						IRS2L	ED-1000	MCB2S5	MS-2L	10%
C46	1	400		P488N-1		DF-104	CUB4P1		GEM-401	47M-P1	
C47	.0047	800							GEM-16347		10%
C48	3900						IRS1D9			MS-339	10%
C49	001	600		P688N-001		DS-102	CUB6S1	GP-1000	GEM-631	9TM-S1	
C50	680			1467-00068		D6-681	1WS75S	ED-680	UC-5368	5TM-S68	
C51	001	600		P688N-001		DS-102	CUB6S1	GP-1000	GEM-631	9TM-S1	
C52	110-580										
C53	.047	600		P688N-047		DF-503	CUB6S47			GEM-4147	47M-S47
C54	10000		CCD203X	BPD-01		DD-103	BYA6S1	ED-01	DC511	5HK-S1	②
C55	1	400		P488N-1		DF-104	CUB4P1			GEM-401	47M-P1
C56	100	3000	CC07E	HVD-30-100		DD30-101	HVB30Q1	HDS-100			30GA-T1
C57	68	3000	CC4S20	HVD-30-68		DD30-680	HVB30Q68	HDS-68	DC30468		30GA-Q68
C58	.047	600		P688N-047		DF-503	CUB6S47			GEM-6147	9TM-S47
C59	.047	600		P688N-047		DF-503	CUB6S47			GEM-6147	9TM-S47
C60	.047	600		P688N-047		DF-503	CUB6S47			GEM-6147	9TM-S47

① Not used in some versions.
② Some versions use 1000mmf in this application

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	OLYMPIC PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	500K	½	PTK3615	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSH-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWS-13	Not Req.	Not Req.	
R2A	1 Smeg	½	PTK3615-1	B-742	A47-1 Smeg -S	Q11-139	U155	Vert. Hold
B	Shaft			Not Req.	KSH-3	Not Req.	Not Req.	
R3A	1meg	½	PTK3616-2	B-69	A47-1meg-S	Q11-157	U54	Horiz. Hold
B	Shaft			Not Req.	KSH-3	Not Req.	Not Req.	
R4A	1 Smeg	½	PTK3615-1	B-742	A47-1 Smeg -S	Q11-139	U155	Brightness
B	Shaft			Not Req.	KSH-3	Not Req.	Not Req.	

CONTROLS (cont)

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	OLYMPIC PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R5A	1500Ω	½	PTK3616	B-6	A47-1500-S	Q7-109	U8	Contrast
B	Shaft			Not Req.	KSH-3	Not Req.	Not Req.	
R6A	5000Ω	½	PTK3619-2	AB-10	A47-5000-S	BU-1114	TA53L	Vert. Lin.
B	Shaft			AK-1	FKS-1/4	TM3-K11	Not Req.	
R7A	2.5meg	½	PTK3008-1	AB-83 & AK-1	A47-2.5meg & FKS-1/4	BU-339 & TM3-K11	TA88L & Not Req.	Vert. Height
B	Shaft							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		OLYMPIC PART No	NOTES
	OHMS	WATT		
R8	680Ω	1		
R9	330Ω			
R10	82Ω			
R11	18K			
R12	1meg			
R13	1.5meg			
R14	1meg			
R15	82K			Note 1
R16	3300Ω	2		
R17	3300Ω	2		
R18	33K	2		
R19	47Ω			
R20	1500Ω			
R21	150K			
R22	22K			
R23	47K			Note 2
R24	150K			Note 2
R25	1meg			
R26	22K			
R27	47K			
R28	270K	2		
R29	560K			
R30	560Ω			
R31	1meg			
R32	1meg			
R33	7000	10	RE3069	
R34	2.2meg			
R35	470K			
R36	22K			
R37	330K			
R38	68K			
R39	68K			
R40	100K			
R41	680K			
R42	82K			
R43	4.7meg			Note 3

ITEM No.	RATING		OLYMPIC PART No	NOTES
	OHMS	WATT		
R44	4.7meg			Note 3
R45	820Ω			
R46	1.5meg	1		
R47	1.5meg			
R48	1.5meg			
R49	150K			
R50	560Ω			
R51	2700Ω			
R52	560Ω			
R53	560Ω			
R54	560K			
R55	620K			
R56	100K			
R57	330K	1		
R58	330K	1		
R59	82K			
R60	1meg			
R61	22K			Note 4
R62	15K			
R63	1000Ω			
R64	56K	1		
R65	1meg			
R66	47K			
R67	82K			
R68	12K			
R69	39Ω			
R70	470K			
R71	3300Ω	2		
R72	6800Ω	2		
R73	1000Ω	2		
R74	4700Ω			
R75	3.3Ω	1		
R76	47K	1		
R77	100K	1		
R78	100K	1		

Note 1. Some versions may use 12K in this application.
Note 2. Some versions may use a 100K in this application.
Note 3. Some versions may use a single 10meg to replace R43 and R44.
Note 4. Some versions may use a 10K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI	SEC 1	SEC. 2	SEC. 3	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	540VCT	6V	6.3V	TR4007		P-2942	P-8172		R-65BC
	② 1.2A	⑤ .180A	⑤ 3A	⑤ 8A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	Vert. Output	TR3889	Z1900 ①	A-3039 ② ③	V312 ② ③	A-8141 ② ③	26875 ①	A-102X ①	
T3A B	Yoke-Horiz. (28MH) (90°)-Vert. (40MH)	CL-3900-3	DF607 ③	MDF-92 ③	Y907P19/43 ③	DY-16A ③	Y-16 ④	Y-41 & NW3
T4	Horiz. Output	TR-3598-4	FB41/ * ⑤	KVO-47 * 2X151 *		HO-257 * ⑤	FLY-16 * ⑤	D-13D	
	Alt. Horiz. Output	TR-3599-3							

① Use 18 to 1 turns ratio
② Remove pin #1 of yoke socket from ground Connect green lead to pin #1 of yoke socket. Connect red lead to junction of C4, R6, R73 and pin #7 of yoke socket.
③ Drill new mounting hole(s).
④ Use original horizontal yoke damping network, if necessary.
⑤ This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
9	9	9	9	13	9	
8	8	8	8	11	7	
6	8	7	6	2	7	
3	See Note ⑤ NC	See Note ⑤ NC	4	6	See Note ⑤ NC	
2	3	3	2	1	3	
1	1	1	1	8	1	
Special Notes **	⑤	⑤⑥	⑦	⑧	⑤	

⑤ Install new damping network, consisting of 10000Ω ② 1 watt resistor in series with capacitor(s) (C37) across horizontal yoke terminals #3 and #7.
⑥ Jumper terminals #7 and #6.
⑦ Connect terminal #6 to terminal #8 and connect terminal #2 to terminal #3.
⑧ Connect terminal #3 to terminal #11 and connect terminal #1 to terminal #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI	SEC	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	2400Ω	3-4Ω	TR2766-1	Z1801	A-3025	AU-605	A-3332	24853	S-12X	

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V C	IMP	OLYMPIC PART No	QUAM PART No	
SP1	4"	PM	3-4Ω		SK4342	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	CL2535	19-5036	TV-180	6179	VP-1	36 Microhenries
L2	1st. Video IF	CL4753	17-4534	TV-131			
L3	2nd. Video IF	CL5870					1.7 Microhenries
L4	Resonant Choke	CK4325					180 Microhenries, wound on 12K resistor
L5	Series Peaking Coil	CL2358	19-5180 *	TV-184 *	6180 *	VP-5 *	180 Microhenries, wound on 39K resistor - Note 1
L6	Shunt Peaking Coil	CL2537	19-4180	TV-183	6179	VP-5 ▲	180 Microhenries, wound on 39K resistor - Note 1
L7	Series Peaking Coil	CL2403	19-3200 *	TV-199 *	6155 *		300 Microhenries, wound on 1meg resistor
L8	Shunt Peaking Coil	CL2537	19-4180	TV-183	6179	VP-5 ▲	180 Microhenries, wound on 39K resistor - Note 1
L9	1st. Sound IF	CL2614					Includes Cap.
L10	2nd. Sound IF	CL4031	17-3413				
L11	Quadrature Coil	CL2603				SD-5	Includes Cap. - Note 2
L12	RF Choke	CK4415					6.8 Microhenries - IRC Part #CL-1

Note 1. Some versions may use 500 Microhenries, part #CL2614 in this application.
Note 2. Some versions may use part #CL3603-1 in this application.
* Parallel with 12K resistor
▲ Parallel with 39K resistor
● Parallel with 1meg resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA					NOTES
	PRI	SEC	OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L13	53Ω		CL5494	19-1570	TV-163	6210	H-102		

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ᴰᶜ(ᵐᵃ)	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	.180A	80Ω	.6 Hy.	CK4041			C-2327	28C41	C-34X

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	OLYMPIC PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1		RF5485	1N15 ①	171 ①			① Two required.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	C	3/8A 250V	FU3966	FH3852	312.375 (C 3/8A - 250V)	346003	C 3/8	HC 3/10 to 1/3

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N94 *	1N94	1N94	1N90	Video Detector (Pigtail) * A 1N80 may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M4	Tuner	CL5816	VHF
M5	Switch	PP3045-1	Local-Distant, Slide type DPDT
M6	Centering Device	PP4507-1	Includes yoke pressure plate
M7	Ion Trap	PP2948	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	PP3555	
Mask	PP3045-1	
Escutcheon	ES5010-1	
Knob	KN5183	Channel Selector
Knob	KN5183	Fine Tuning
Knob	KN5186	(5 used)
Cabinet	CAS430	

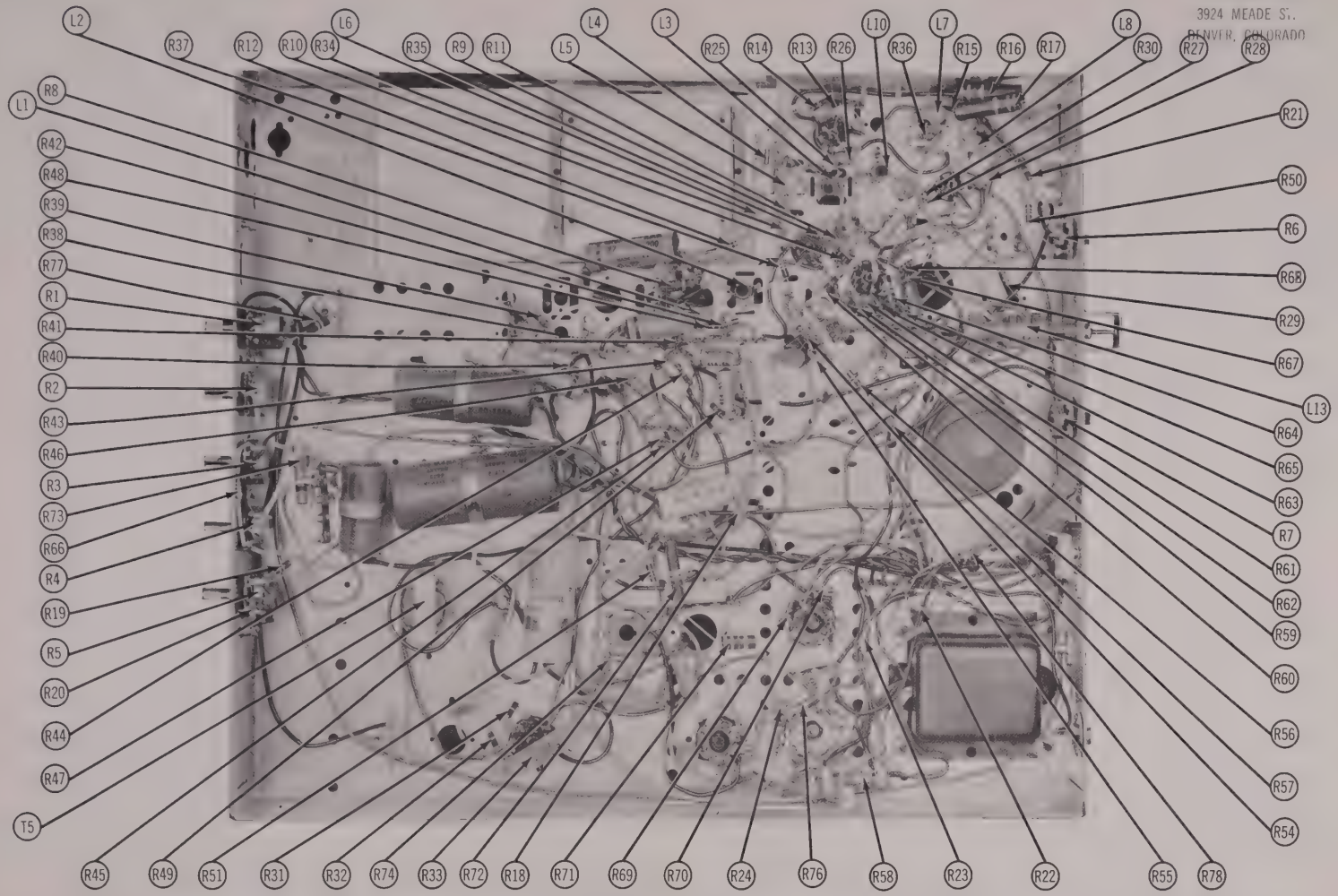
WIRING DATA

High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8875
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

OLYMPIC MODEL 1TY95L (Ch. DY)

FOLDER 2

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

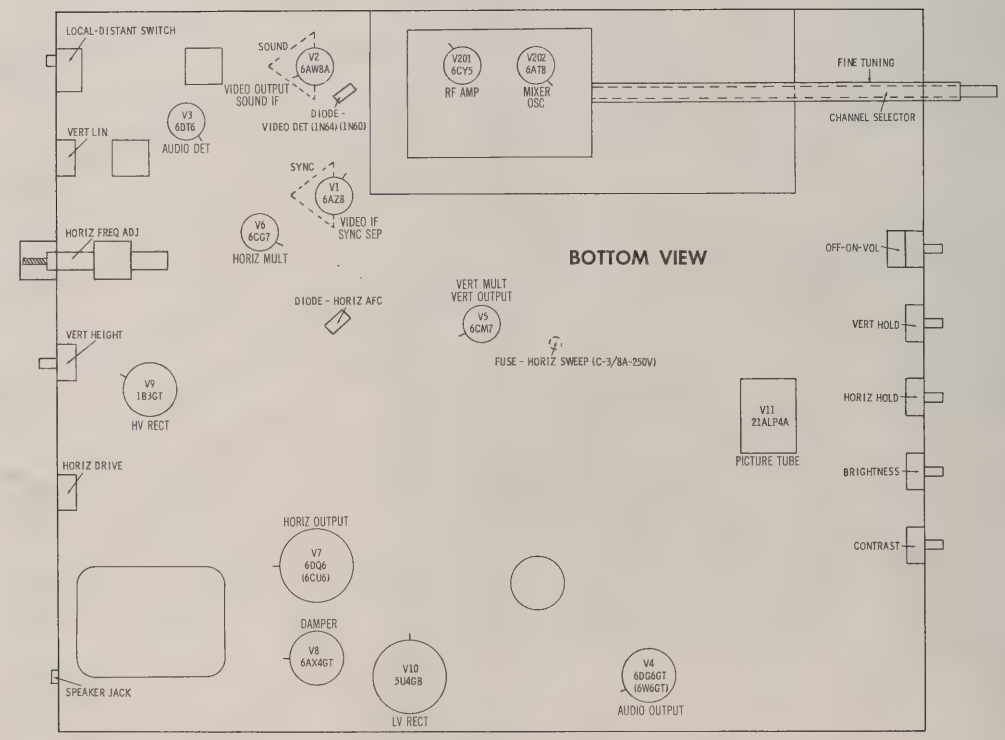


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AZ8	■ 330Ω	■ 330Ω	82Ω	.1Ω	0Ω	3.3Ω	0Ω	† 330K	2.2meg
V2	6AW8A	0Ω	1meg	■ 22K	.1Ω	0Ω	• 80Ω	530K	† 33K	† 6600Ω
V3	6DT6	3.3Ω	560Ω	0Ω	.1Ω	† 270K	■ 0Ω	560K		
V4	6DG6GT	0Ω	0Ω	† 860Ω	† 700Ω	450K	NC	.1Ω	¶	
V5	6CM7	‡2400Ω	NC	0Ω	0Ω	.1Ω	‡1.5meg	• 1meg	1.5meg	• 2200Ω
V6	6CG7	† 9000Ω	1.6meg	1000Ω	.1Ω	0Ω	† 82K	55K	1000Ω	0Ω
V7	6DQ6	0Ω	0Ω	0Ω	† 8900Ω	470K	TP	.1Ω	0Ω	TOP CAP ‡26Ω
V8	6AX4GT	NC	NC	¶	NC	† 0Ω	NC	.1Ω	0Ω	
V9	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡596Ω
V10	5U4GB	NC	¶	TP	30Ω	TP	32Ω	NC	¶	
V11	21ALP4A	0Ω	22K	PIN 6 ‡30K	PIN 10 ‡30K	PIN 11 • 450K	PIN 12 .1Ω			
V201	6CY5	1meg	0Ω	0Ω	.1Ω	■ 0Ω	■ 13K	0Ω		
V202	6AT8	15K	■ 5200Ω	0Ω	0Ω	.1Ω	■ 2300Ω	■ 470Ω	0Ω	110K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM 130V SOURCE.
† MEASURED FROM 265V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

VIDEO IF ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05mfd	High side to terminal #2 of terminal strip on top of tuner. Low side to chassis.	44.5MC	43.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru detector (Fig. 1) to pin 1 (plate) of 6AZ8 (V1). Low side to chassis.	A1, and mixer plate coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
2.	"	High side to pin 6 (grid) of 6AZ8 (V1). Low side to chassis.	"	43.25MC 45.5MC 45.75MC	"	Vert. Amp. thru 10K to point (A). Low side to chassis.	A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown.
3.	"	High side to terminal #2 of terminal strip on top of tuner. Low side to chassis.	"	"	"	"		Check for response curve similar to Fig. 4. If necessary, retouch mixer plate coil and A1 thru A3.

SOUND IF ALIGNMENT

Turn the set on and tune in a strong TV signal. Adjust A4 for maximum volume. Disconnect the antenna and if necessary, insert an attenuator in series with the antenna to provide a weak signal. Adjust A5 and A6 for maximum volume. (A weak signal is necessary to make the peaks distinguishable.) Reconnect the antenna directly for a strong signal and retouch A4 for maximum undistorted sound.

RF TUNER ALIGNMENT

See page

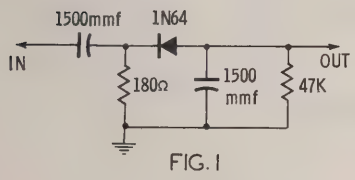


FIG. 1

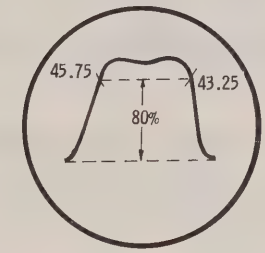


FIG. 2

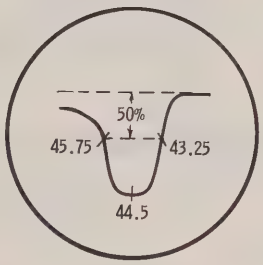


FIG. 3

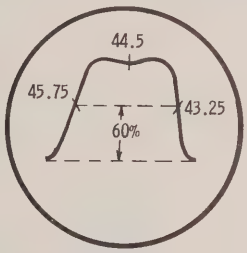
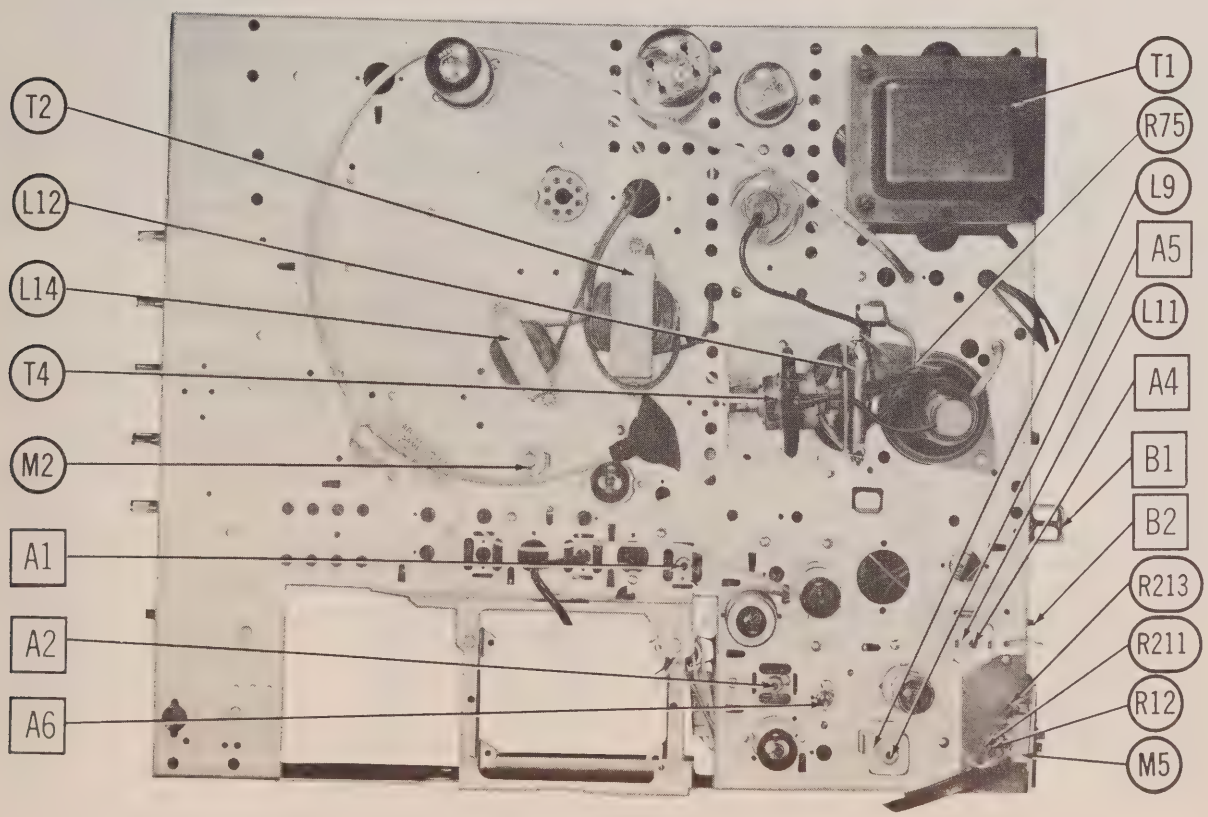


FIG. 4



CHASSIS TOP VIEW

SET 391 FOLDER 2

OLYMPIC
MODEL 1TY95L (Ch. DY)

FOLDER 2

TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range. (To do so, turn the fine tuning so that the flat portion of the fine tuning shaft is in a vertical plane.)
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizonal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across video det. load	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
2.	"	"	85MC	83.25MC 87.75MC	6	"	A202	"
3.	"	"	69MC	67.25MC 71.75MC	4	"	A203	"
4.	"	"	57MC	55.25MC 59.75MC	2	"	A204	"

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

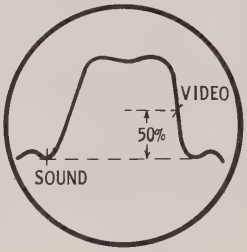


FIG. 201

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Oscillator	6AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

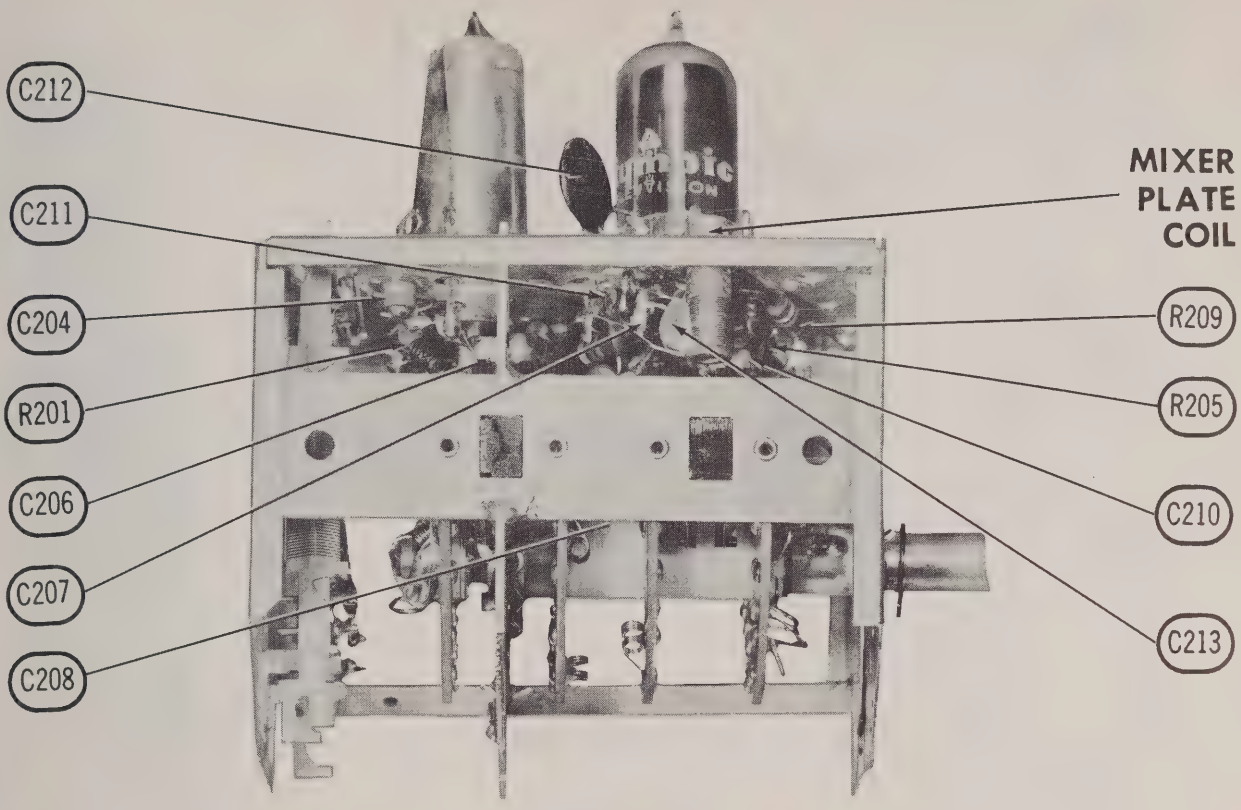
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	47			N750-DI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	N750
C202	2.7									
C203	5			NPO-DI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V5	NPO 10%
C204	1000			EF-001	MFT-1000				503C-D1	
C205	1000			EF-001	MFT-1000				503C-D1	
C206	1000			EF-001	MFT-1000				503C-D1	
C207	1000			EF-001	MFT-1000				503C-D1	
C208	.91									
C209	5			NPO-DI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V5	NPO 10%
C210	1.2			NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	
C211	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C212	56			NPO-DI 56	TCZ-56	C10Q56C	TCO-56			NPO 10%
C213	10			NPO-DI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	NPO 10%
C214	6.8			NPO-DI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	NPO 10%
C215	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C216	1000			EF-001	MFT-1000				503C-D1	
C217	1.5									N2200

RESISTORS

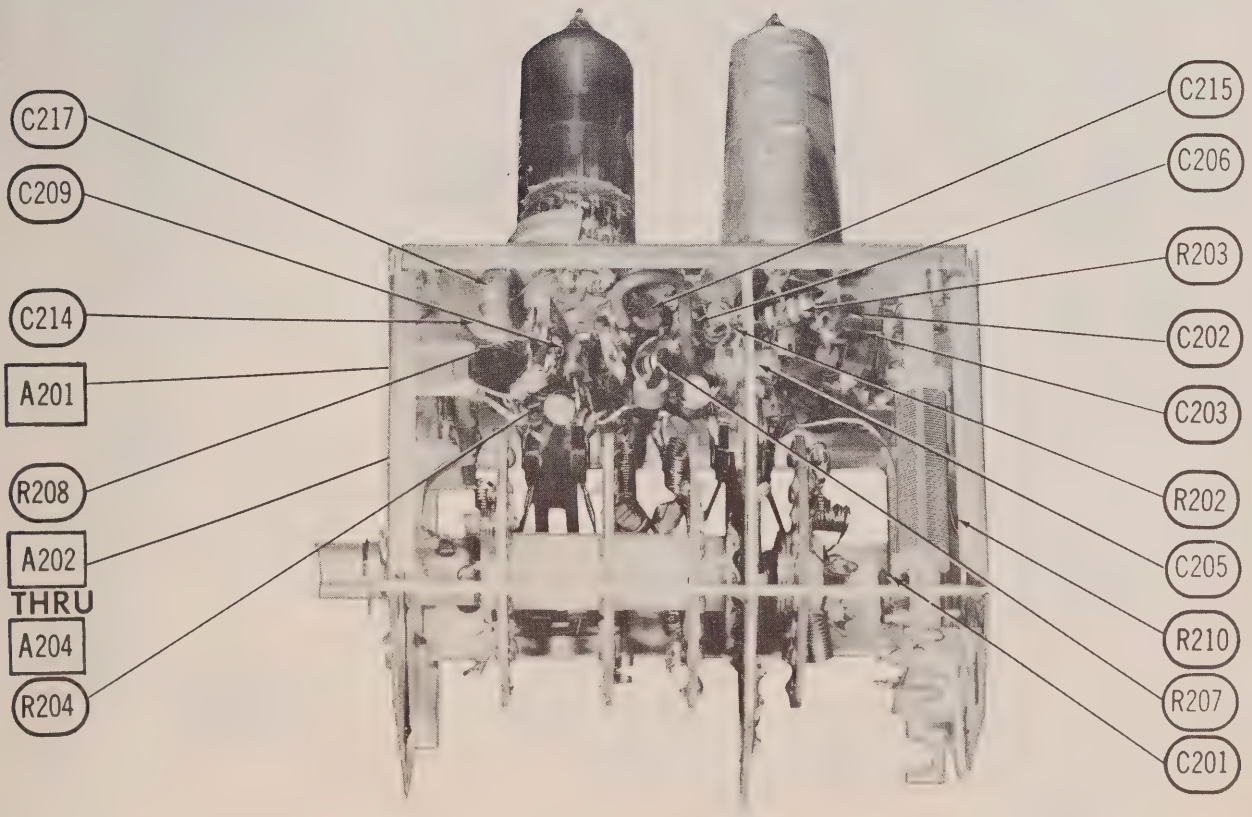
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R201	15K			
R202	18K			
R203	47K			
R204	10K			
R205	100K			
R206	1800Ω			
R207	470Ω			

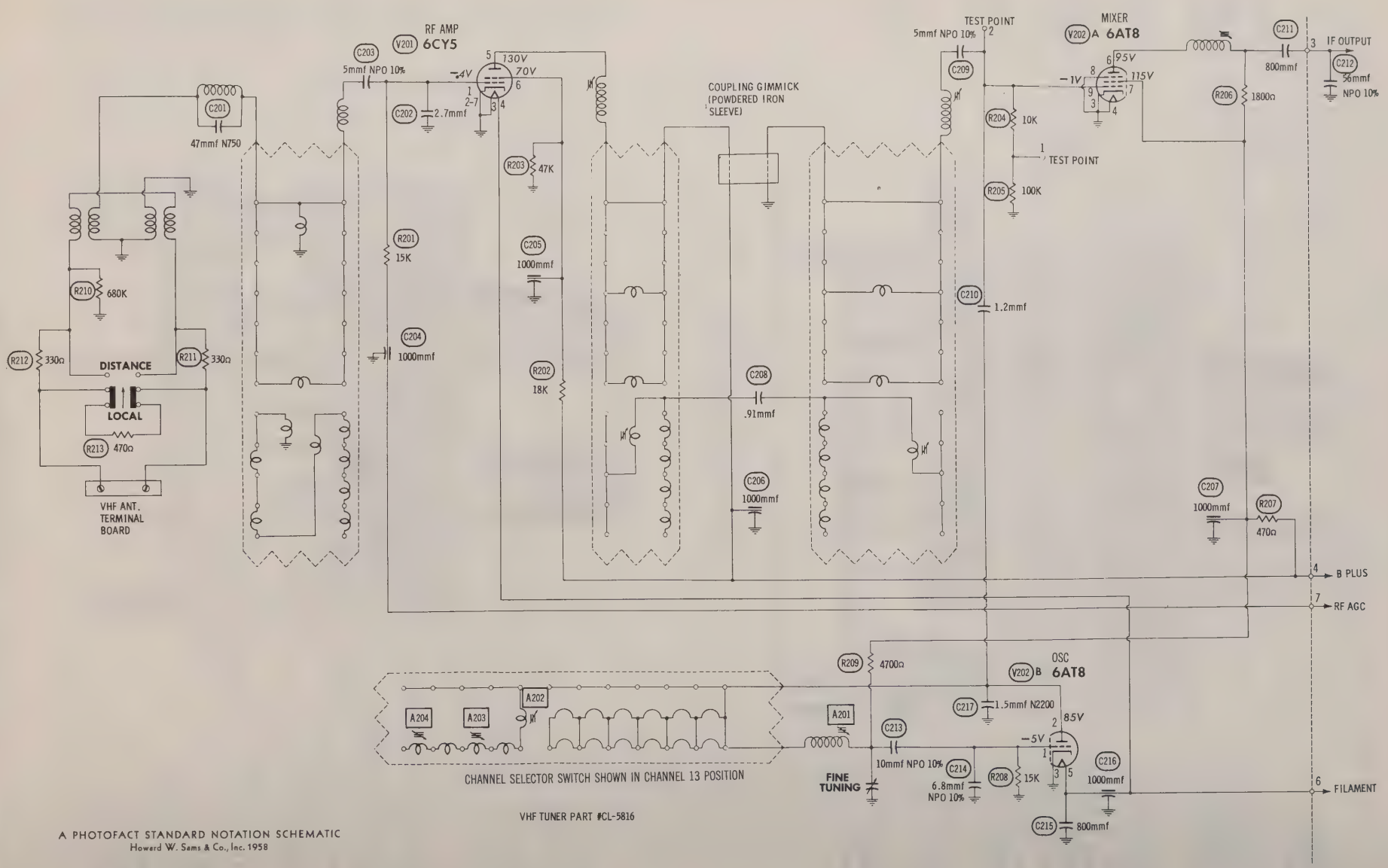
ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R208	15K			
R209	4700Ω			
R210	680K			
R211	330Ω			
R212	330Ω			
R213	470Ω			



RF TUNER-LEFT SIDE



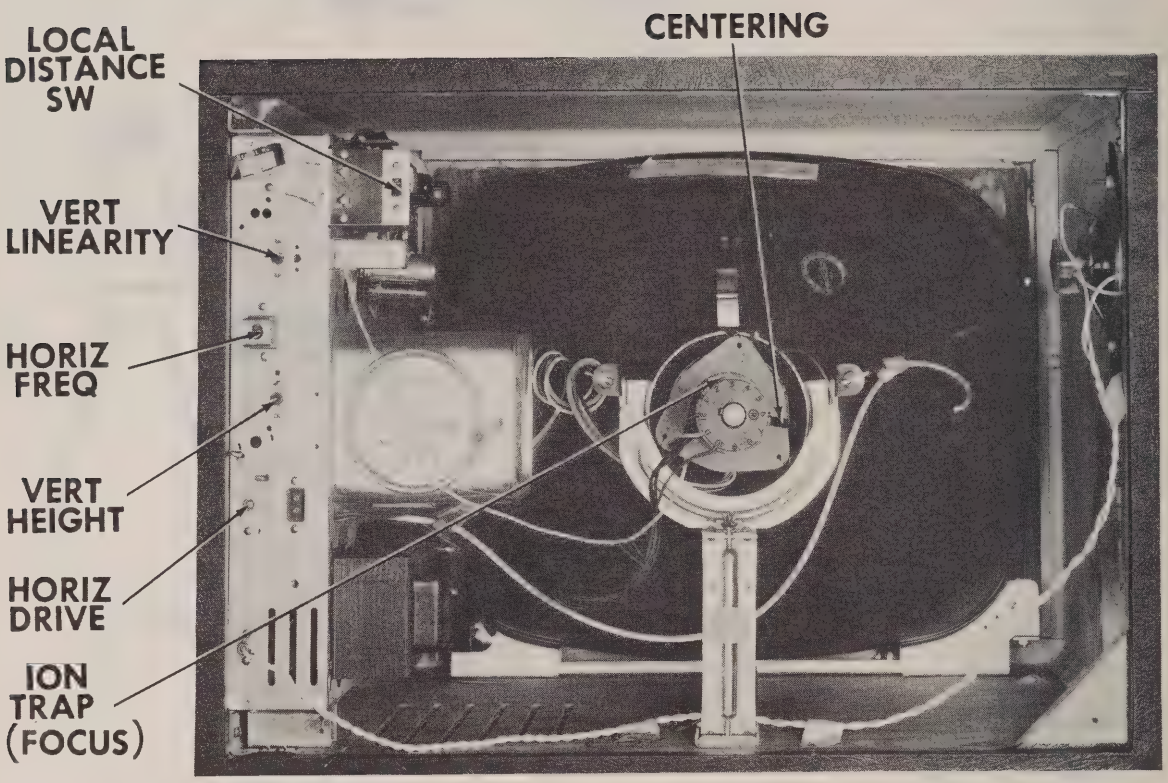
RF TUNER-RIGHT SIDE



A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

TUNER SCHEMATIC



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with test pattern.

Set the horizontal hold control to the center of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the horizontal drive trimmer (B2) clockwise until bright vertical line(s) or compression appear near the center of the screen (drive lines). Turn B2 counter clockwise until the line disappears.

PHOTOFACT* Folder
*TRADE MARK

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
[illegible], COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the front.

2. Remove 9 wood screws from the rear cover. Remove the rear cover.

3. Remove phono, on-off and power tuning plugs from the control bracket, the picture tube socket, HV lead, yoke plug and speaker leads.

4. Remove 2 wood screws holding the AC interlock assembly.

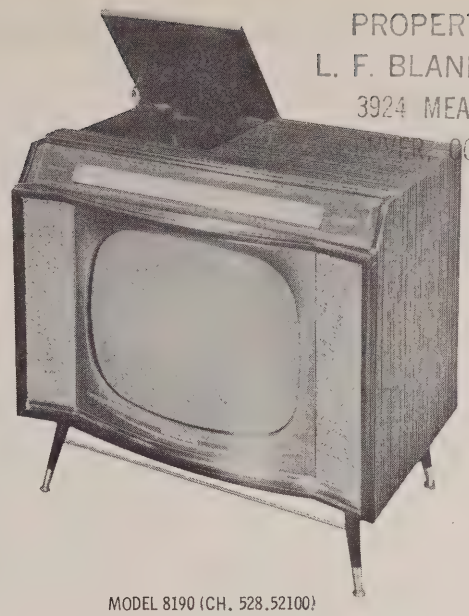
5. Remove 2 wood screws holding the channel indexing switch assembly.

6. Remove 7 wood screws and 2 hex nuts holding the tuner and control panel assembly to the front of the cabinet.

7. Remove 2 wood screws from the top chassis brace.

8. Remove 2 chassis bolts from the bottom.

9. Remove the chassis.



MODEL 8190 (CH. 528.52100)

SILVERTONE MODELS 8190, A, 8191, A, 8192, A, 8193, A (Ch. 528.52100, 101, 102, 528.52110, 111, 112 and Radio Ch. 528.53190)

TRADE NAME	Silvertone	MODELS	CHASSIS
		8190, 8190A, 8192, 8192A	528.52100
		8190, 8190A, 8192, 8192A	528.52101
		8190, 8190A, 8192, 8192A	528.52102
		8191, 8191A, 8193, 8193A	528.52110
		8191, 8191A, 8193, 8193A	528.52111
		8191, 8191A, 8193, 8193A	528.52112
		8190, 8191, 8192, 8193 (Record Changer Chassis)	528.56200
		8190, 8191, 8192, 8193 (Record Changer Chassis)	528.56210
		8190A, 8191A, 8192A, 8193A (Record Changer Chassis)	528.56240
		8190A, 8191A, 8192A, 8193A (Record Changer Chassis)	528.56250
		7777 (Radio)	528.53190 *

* May be used with any Model TV.

SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Avenue, Chicago, Illinois
TYPE SET	Combination Television Receiver and Phonograph
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 155 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 13 adjustment is located at 1 o'clock, proceed in a counter clockwise direction adjusting for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws holding the trim strip at the top edge of the safety glass. Remove the trim, tilt the top of the glass out and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC
Tune in the strongest station in the area. Turn the AGC control counter clockwise until the picture becomes unstable, then clockwise until the picture just becomes stable.

B. FOCUS
The focus may be varied in steps by the position of a plug in the focus adjustment socket . NOTE: Some sets may be equipped with a beam alignment manget on the neck of the picture tube. With the part number of the magnet toward the front of the tube adjust magnet for best focus.

C. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A11) located on top of chassis.

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

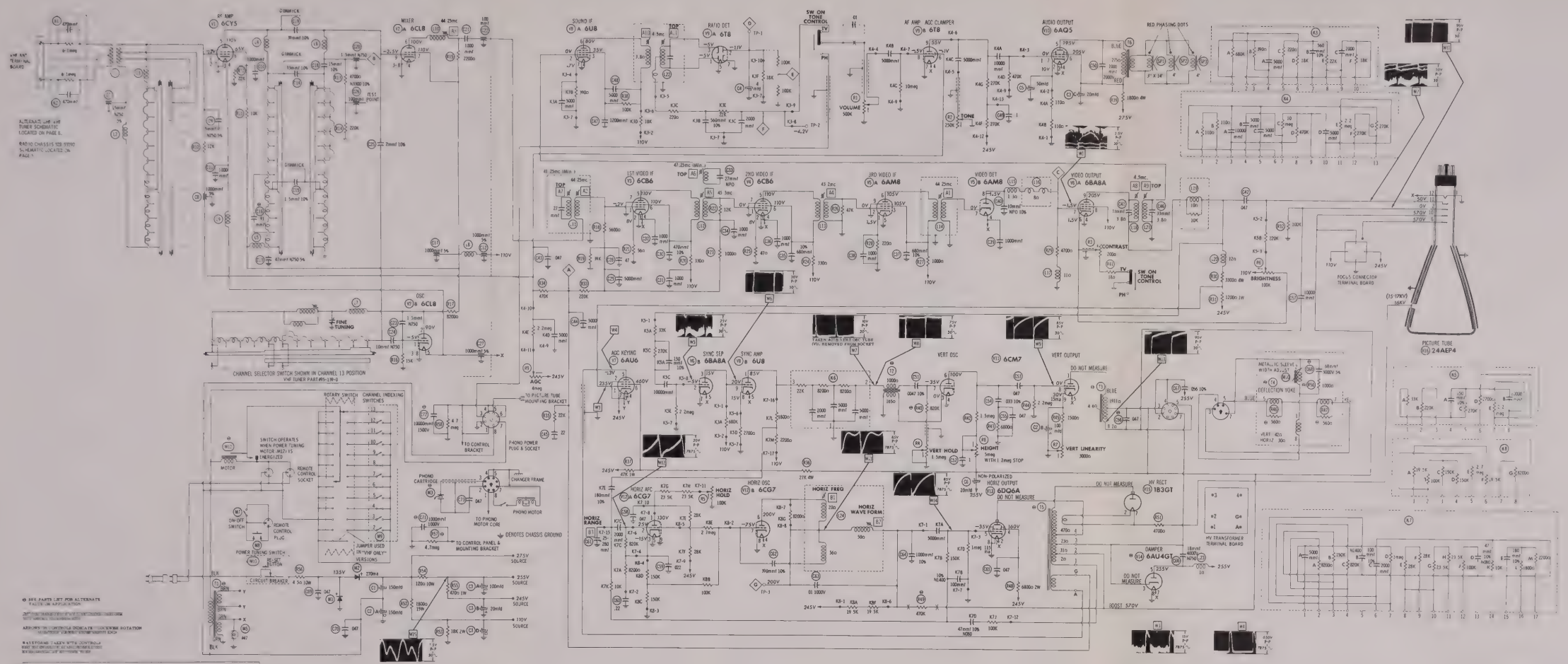
FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SILVERTONE CHASSIS 567.40000 — PHOTOFACT SET 365 - FOLDER 13.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H364

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

FOLDER 3

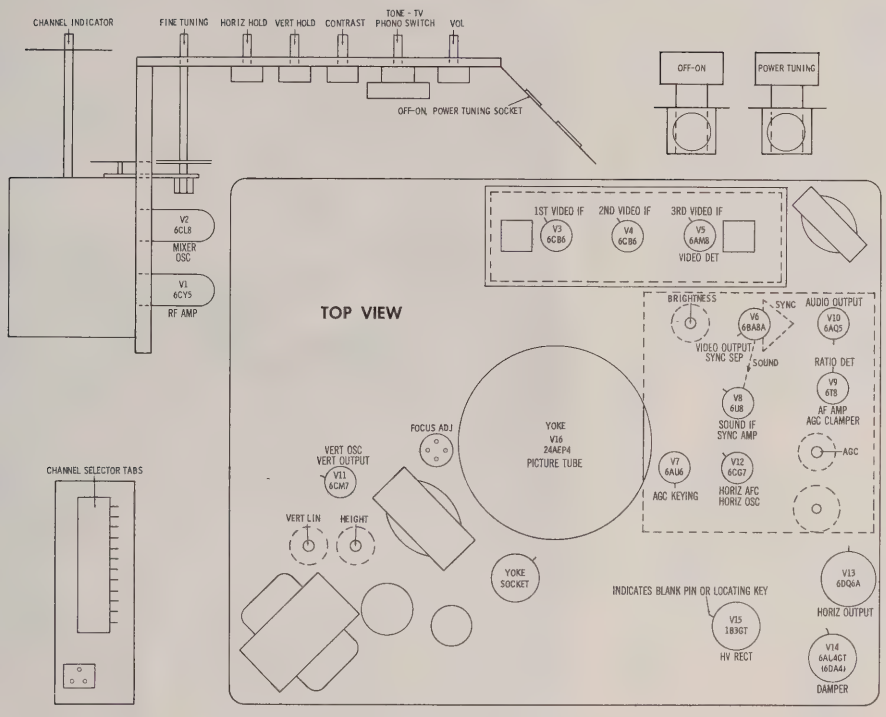


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

SILVERTONE MODELS 8190, A, 8191, A, 8192, A, 8193, A (Ch. 528.52100, 101, 102, 528.52110, 111, 112 and Radio Ch. 528.53190)

TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
[illegible], COLORADO



TUBE FAILURE CHECK CHART

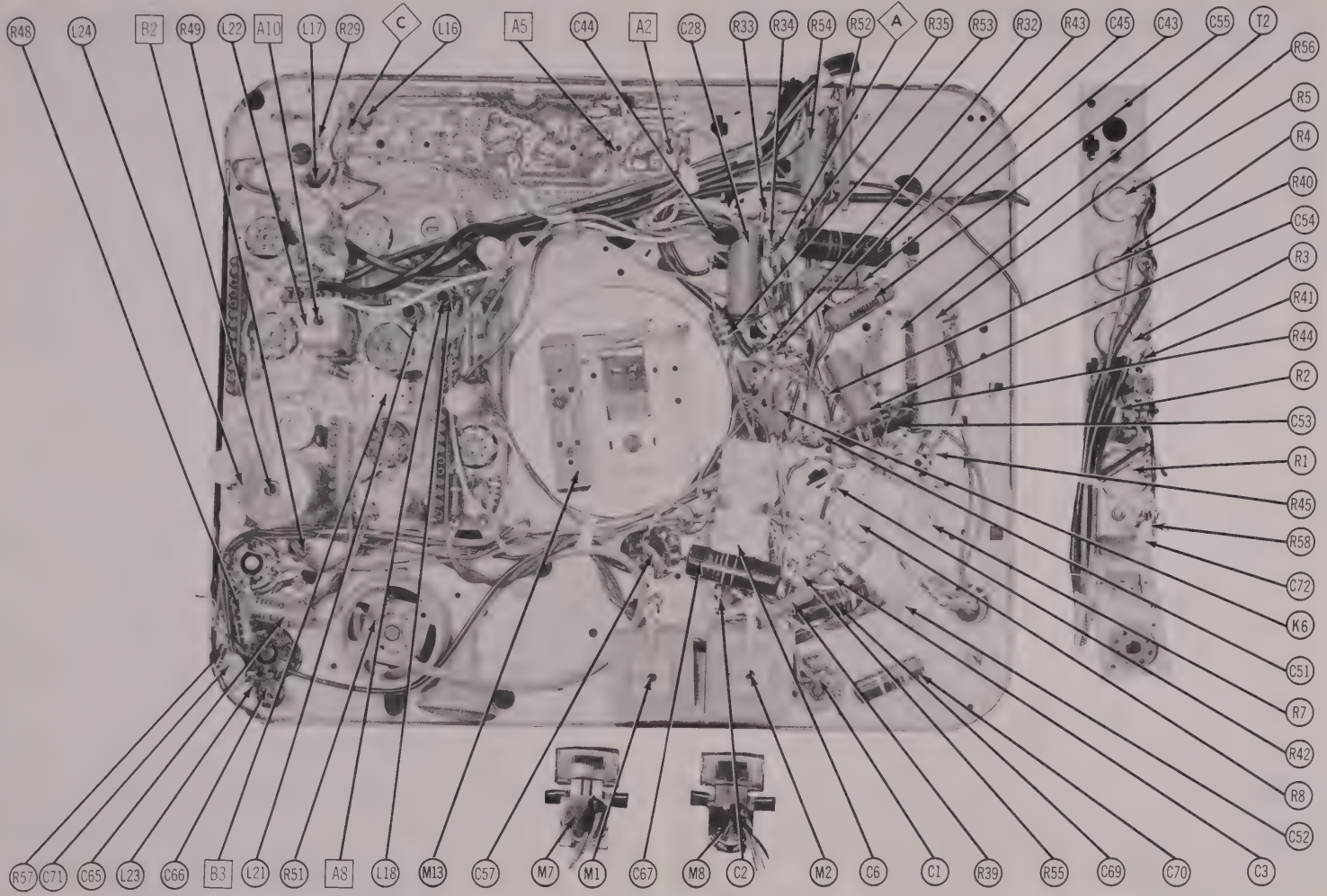
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **Circuit Breaker (M13), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V16**
Has pic, no sound - **V8, V9, V10**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V6, V8**
No horiz. sync - **V6, V8, V12**
No vert. or horiz. sync - **V6, V8**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, M1, M2**
Vert. off freq. - **V11**
Horiz. off freq. - **V12**



CHASSIS-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS 8190, A, 8191, A, 8192, A, 8193, A (Ch. 528.52100, 101, 102, 528.52110, 111, 112 and Radio Ch. 528.53190)

RADIO SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 3

PRE-ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point Ⓐ. Positive to chassis.
Detune A2, A3, A5, A6 and A7 by turning slugs almost out of the coil forms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Fig. 1	High side thru network (Fig. 1) to point Ⓑ. Low side to chassis.	44.25MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A1, A2, A3	Attenuate generator output to maintain not more than -2.5 volts on VTVM. Adjust for maximum deflection.
2.	"	"	43.2MC	"	"	A4	"
3.	"	"	45.3MC	"	"	A5	"
4.	"	"	47.25MC	"	"	A6	Increase generator output. Adjust for MINIMUM deflection. Repeat steps 3 and 4.
5.	"	"	41.25MC	"	"	A7	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Attenuate sweep generator output to maintain not more than 2 volts peak to peak on the scope.
If a separate marker generator is used, couple it loosely to the sweep generator output cable.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Fig. 1	High side thru network (Fig. 1) to point Ⓑ. Low side to chassis.	44.25MC (10MC Swp)	41.25MC 42.75MC 43.8MC 44.25MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓒ. Low side to chassis.		Check for response similar to Fig. 2. Adjust A3 to place 45.75MC marker at 50%. Adjust A2 for proper tilt.

SOUND IF ALIGNMENT

Connect the two matched 100K (±1%) resistors in series from point Ⓓ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001mfd	High side to point Ⓒ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓓ. Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point Ⓔ. Common to point Ⓕ.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

VHF OSCILLATOR ALIGNMENT

Turn the set on and allow 15 minute warm-up period. Set the fine tuning to the center of its range. This is accomplished by turning the fine tuning so that the hole in the fiber drive wheel is centered over the channel 12 oscillator adjustment hole.
Turn the channel selector to the highest frequency channel operating in the area. Alway adjust the highest operating channel first, then the others in descending order. With a non-metallic screwdriver, adjust the proper oscillator adjustment screw for clearest picture. The oscillator adjustment screws are identified by the channel number stamped into the metal next to the proper adjustment opening. Channels 7 and 8 share the same screw for adjustment, all others have separate adjustment screws.
Be very careful not to turn any of the adjustment screws too far counter clockwise, or they will fall out and necessitate the removal of the chassis to replace them.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This protion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

RADIO ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
9.	.1mfd	High side to pin 7 (grid) of converter (12BE6). Low side to chassis.	455KC (400~ 30% AM)	Radio	Tuning gang fully open.	Across voice coil	A12, A13, A14, A15	Adjust for maximum deflection.
10.	"	"	1620KC	"	"	"	A16	"
11.		Loop	1400KC	"	Tune to 1400KC	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

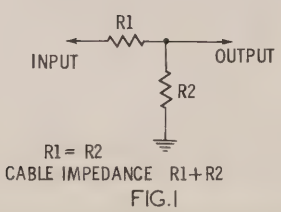


FIG.1

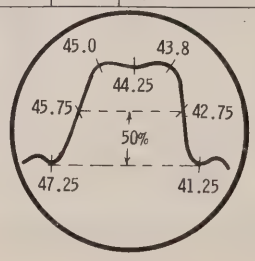
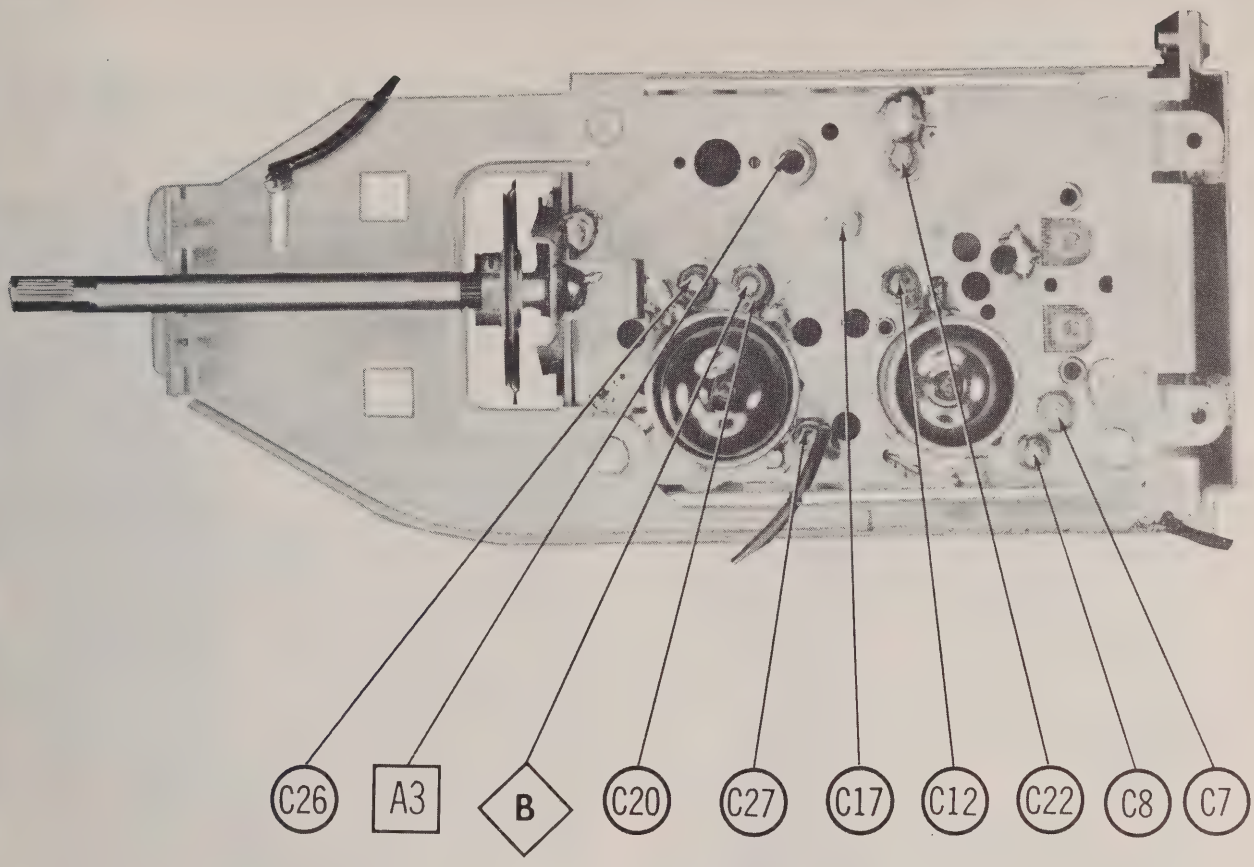
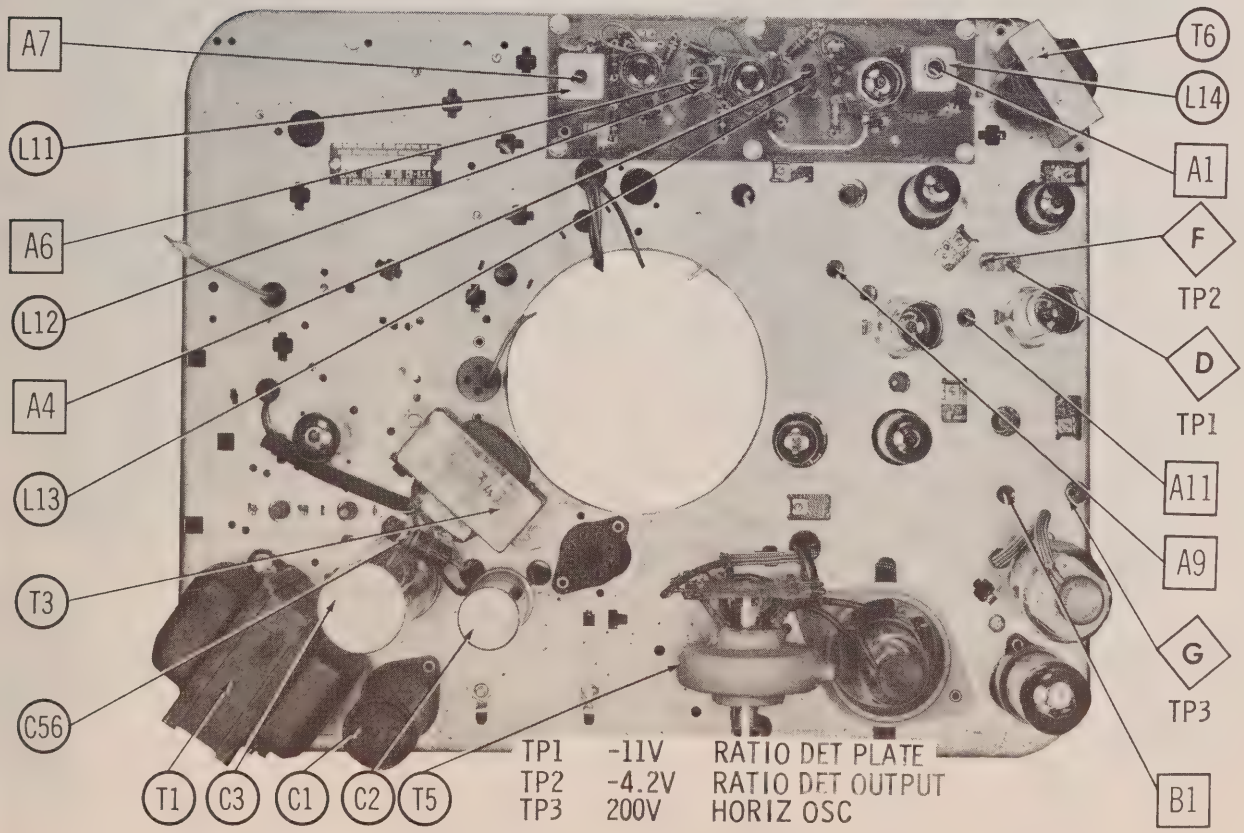


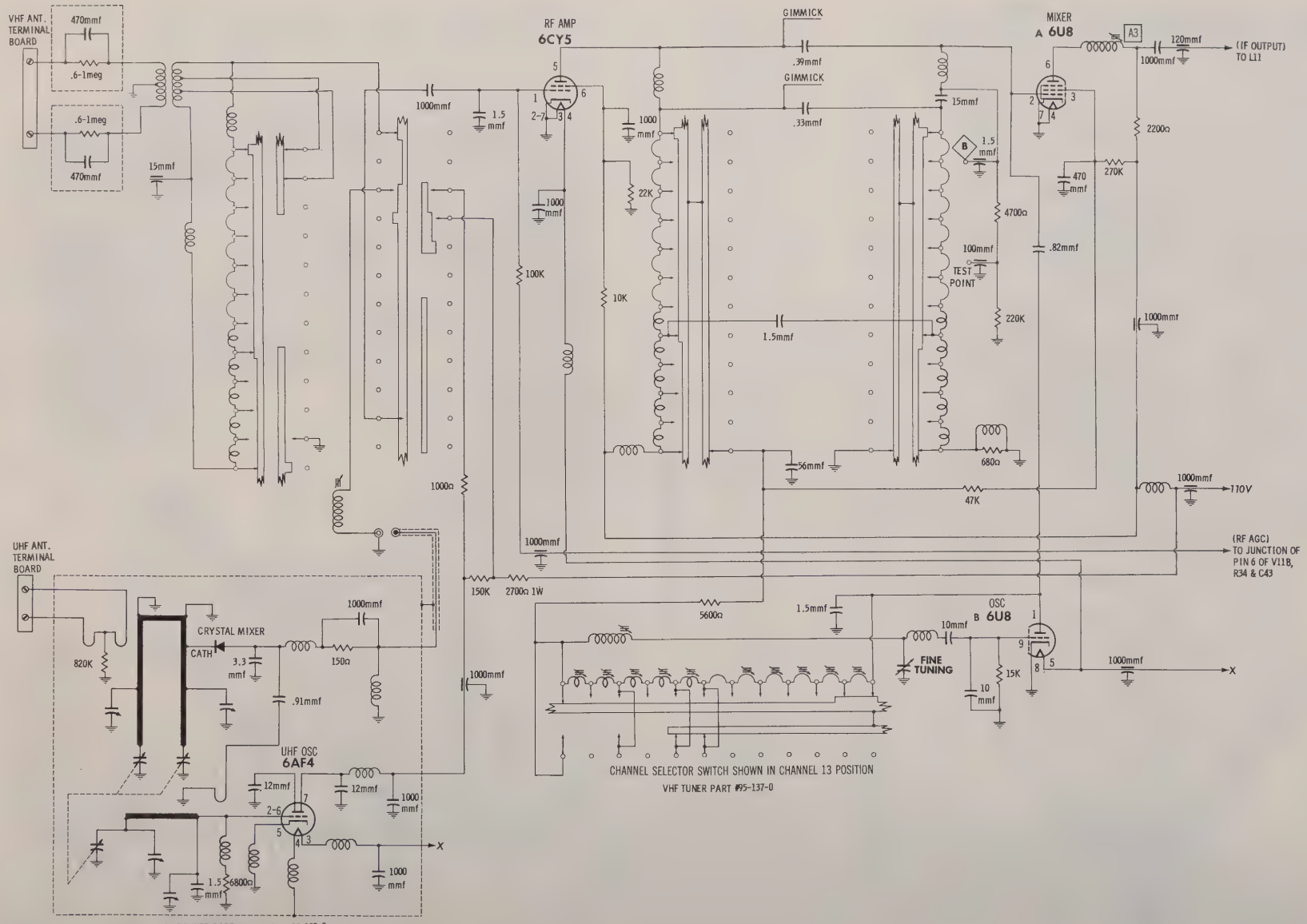
FIG.2



RF TUNER-TOP VIEW



CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

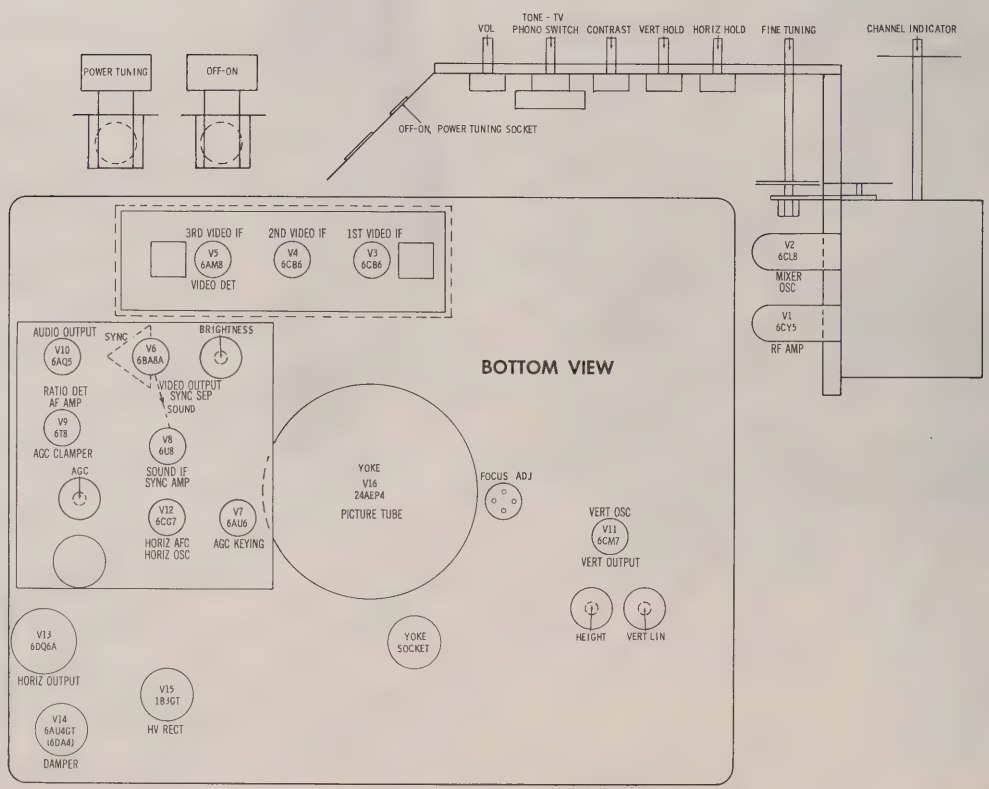
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC

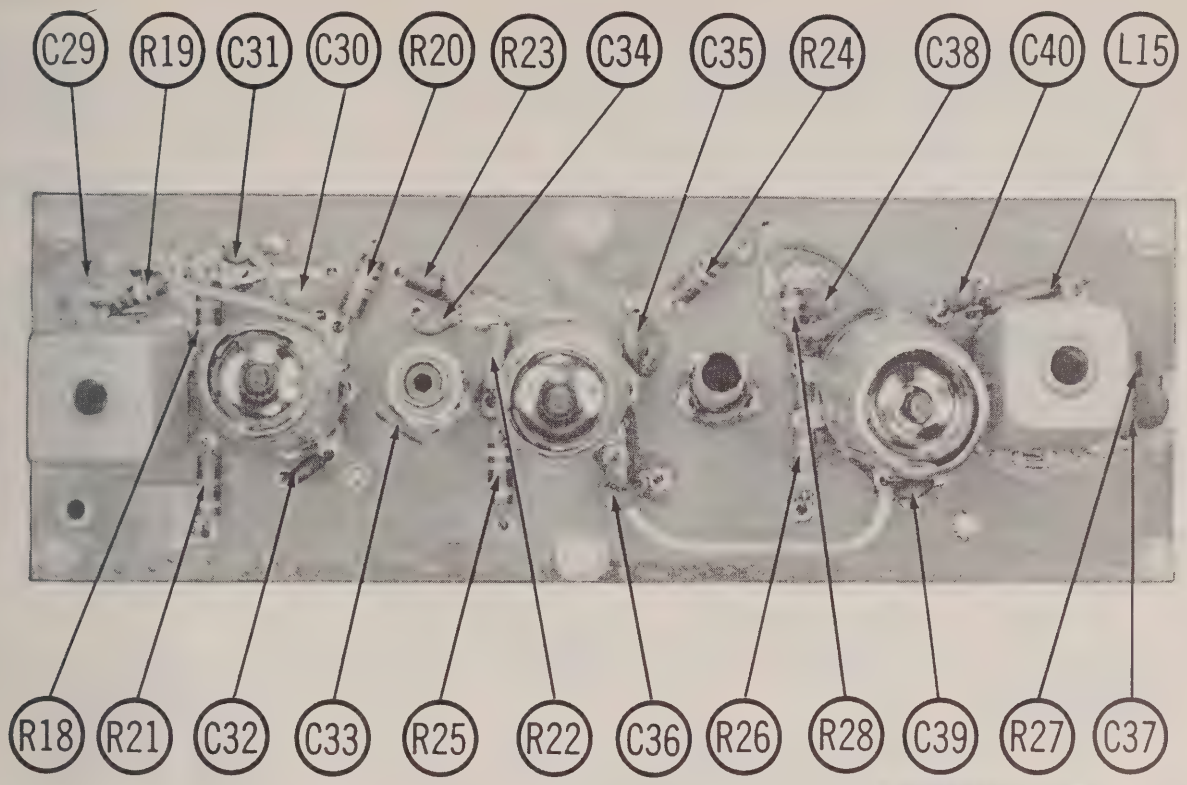
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CY5	550K	0Ω	0Ω	.1Ω	† 1800Ω	† 9000Ω	0Ω		
V2	6CL8	15K	† 10K	0Ω	0Ω	.1Ω	† 4000Ω	† 1800Ω	0Ω	225K
V3	6CB6	45K	56Ω	0Ω	.1Ω	† 2100Ω	† 2100Ω	0Ω		
V4	6CB6	40K	47Ω	0Ω	.1Ω	† 2100Ω	† 2100Ω	0Ω		
V5	6AM8	220Ω	.1Ω	† 2800Ω	.1Ω	0Ω	† 2800Ω	.1Ω	4700Ω	0Ω
V6	6BA8A	0Ω	2.2meg	† 680K	0Ω	.1Ω	• 120Ω	4700Ω	† 1800Ω	† 5500Ω
V7	6AU6	† 1800Ω	† 590Ω	† 590Ω	† 590Ω	250K	‡27K	† 590Ω		
V8	6U8	† 5800Ω	3.8Ω	† 110K	0Ω	.1Ω	† 20K	390Ω	2700Ω	† 680K
V9	6T8	INF	18K	INF	.1Ω	0Ω	500K	0Ω	10meg	† 540K
V10	6AQ5	470K	220Ω	0Ω	.1Ω	† 2000Ω	† 1800Ω	470K		
V11	6CM7	‡1950Ω	NC	165Ω	0Ω	.1Ω	• ‡4meg	• 1.3meg	2.2meg	• 2000Ω
V12	6CG7	† 30K	1.1meg	300K	.1Ω	0Ω	† 39K	250K	0Ω	0Ω
V13	6DQ6A	NC	.1Ω	TP	† 7400Ω	1meg	NC	0Ω	0Ω	TOP CAP ‡23Ω
V14	6AU4GT	NC	NC	¶	TP	† 120Ω	TP	.1Ω	0Ω	
V15	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡493Ω
V16	24AEP4	0Ω	100K	PIN 6 ‡31Ω	PIN 10 ‡31Ω	PIN 11 • 250K	PIN 12 .1Ω			

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 275V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



VIDEO IF PRINTED BOARD

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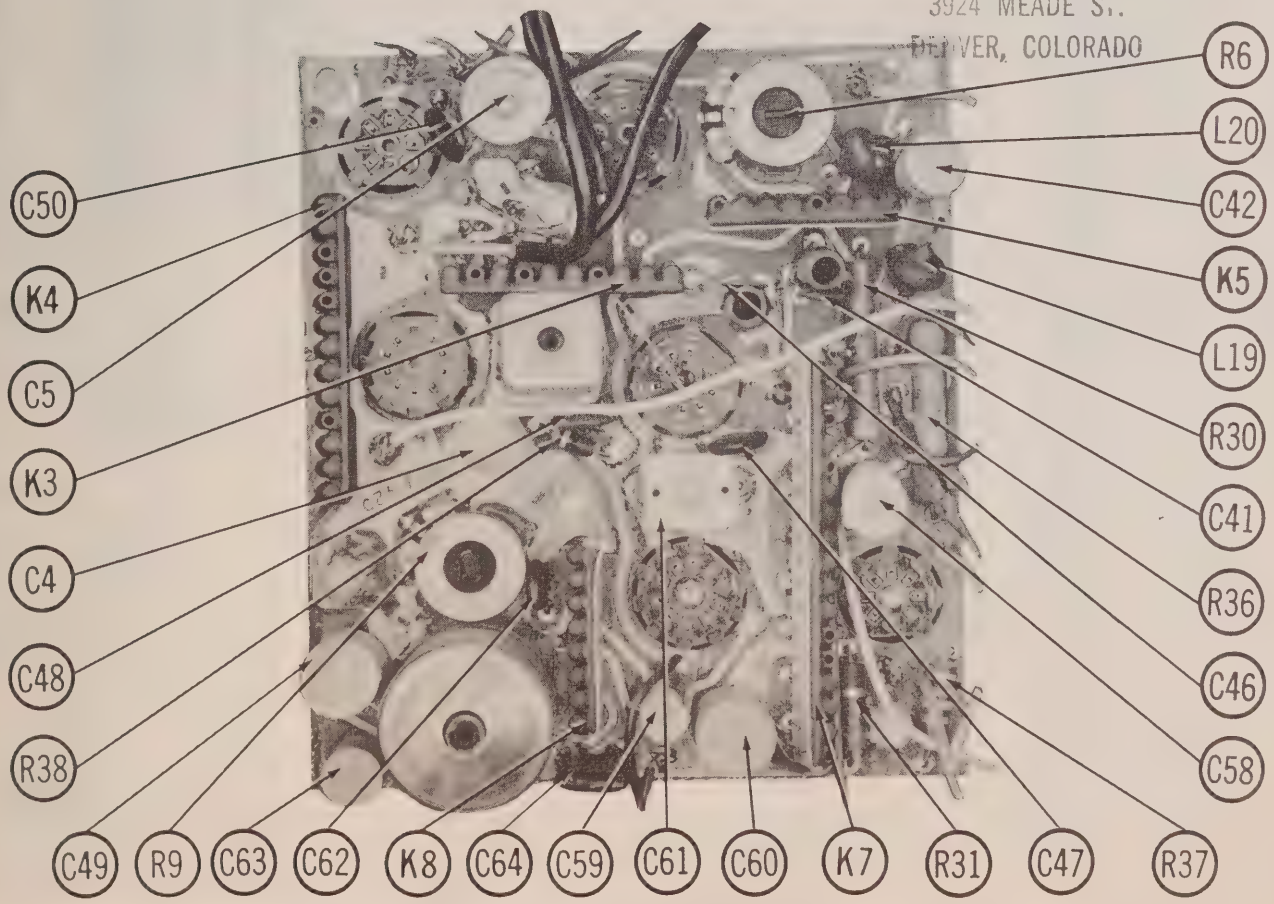
3924 MEADE ST.
DENVER, COLORADO



VIDEO SYNC SOUND & HORIZ PRINTED BOARD

SET 391 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6CY3	
V2	Mixer-Osc.	6CL8	
V3	1st. Video IF Amp.	6CB6	
V4	2nd. Video IF Amp.	6CB6	
V5	3rd. Video IF Amp. - Video Det.	6AH8	
V6	Video Output-Sync Sep	6BA8A	
V7	AGC Keying	6AU8	
V8	Sound IF Amp -Sync Amp	6U8	
V9	Ratio Det. -AF Amp - AGC Clamper	6T8	
V10	Audio Output	6AQ5	
V11	Vert. Osc. -Vert Output	6CM7	
V12	Horiz AFC-Horiz Osc.	6GJ7	
V13	Horiz. Output	6DQ6A	
V14	Damper	6AU6GT	6DA4 *
V15	HV Rectifier	1B3GT	

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: SILVERTONE PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	NOTES
V16	24AE24		24AEP4 ②	24AEP4 ①	① Silver screen '65 ② Silverama

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	SILVERTONE PART No	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.
C1	150	150	18-7-4	AFH33-23	XA0281	FPU1	TMS-25	T-050	TVL-1429
C2A	●150	150	18-8-4	AFH33-78-80	XA0281	FPU1	TMS-25	T-050	R2384 *
B	●100	50			*BU1005	*TC3650	*TD-100-50	*MT-0510	
C3A	●100	100	18-20-3	AFH4-02-60	●D0044	●FP432 ●		Q-011	R2385 *
B	●30	100			●BR2035	●TC17			
C	30	300							
D	●60	100							
C4	4	50	18-32-5	PRS250V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1303
C5	50	25	18-33-5	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1306
C6	30	400	18-39-0	PRS460V4040	BR4045 †	TC78 †	TD-40-450 †	MT-4540 †	R2570 *
		NP			BR4045 †	TC78 †	TD-40-450 †	MT-4540 †	

* Non-catalog item.
● Disregard negative lead.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP	VOLT	SILVERTONE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C7	15		259-150							N750 10%
C8	1000		344-1							5%
C9	5		225-509							N750 5%
C10	1000		2033-23	BPD-001	DD-103	BYA5DL	ED-1000	DC52L	SHK-DI	
C11	1000		2033-23	BPD-001	DD-103	BYA6DI	ED-1000	DC52L	SHK-DI	
C12	1000		344-1							5%
C13	47		233-470							N750 5%
C14	33		2101-338							10%
C15	1.5		2101-159	NPO-S1 1.5	TCZ-1R5	CTA6V15C	TCO-1.5	ZT-5515	STCCB-V15	10%
C16	91									1
C17	1000		344-1							5%
C18	15		2101-150	NPO-S1 15	DD-150	L10Q15	ED-15		STCC-Q15	10%
C19	39		2101-390							10%
C20	1.5		259-150							N750
C21	1000		2033-32	BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SMK-DI	
C22	100		253-101	EF-0001	MTF-100				SG3C-T1	
C23	1.5		170-159							N750
C24	10		165-100							N150
C25	3		2101-309	NPO-S1 3.3	TCZ-3R3	C10Y3C	TCO-3		STCCB-V33	10%
C26	100		353-101							N3300 10%
C27	1000		344-1							5%
C28	47	300	15-47438		P388N-47		CU2P47		GEM-3047	ZTM-P47
C29	5000		15-50217		BPD-005	DD-503	BYA10D6	ED-005	DC52S	SHK-D5
C30	470		15-47111			DS-471	SRS747	ED-470		MS-347
C31	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C32	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C33	27					TCZ-27	CU4Q27C	TCO-27		
C34	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C35	680		15-68111			DS-681	1RS768	ED-680		MS-368
C36	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C37	680		15-68111			DS-681	1RS768	ED-680		MS-368
C38	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C39	1000		15-10217		BPD-001	DD-102	BYA6DI	ED-1000	DC52L	SHK-DI
C40	10		20-14-0		NPO-DL10	CU0Q1C	TCO-10	ZT-541	STCC-Q1	
C41	33				NPO-DL33	CU0Q33C	TCO-33	ZT-5433	STCC-Q33	NPO 10%
C42	.047	400	16-47348		P488N-047		BC5647J		AC6S147	48F-S47
C43	.047	600	20-5471							
C44	5000		15-50217		BPD-005	DD-502	BYA10D6	ED-005	DC52S	SHK-D5
C45	22	200	16-22428		P288N-22		CU2P22		GEM-2022	ZTM-P22
C46	33				NPO-DI 33	CU0Q33C	TCO-33	ZT-5433	STCC- Q33	
C47	1200		20-77-0		DI-0012	DD-122	L10J12	ED-1200	DC-S22	SK-D22
C48	5000		15-50217		BPD-005	DD-502	BYA10D5	ED-005	DC52S	SHK-D5
C49	1	600	20-6-1		P688N-1		BC6P1J		AC6S1	66E-P10
C50	1000	2000	20-76-0		HVD-30-1000	DD30-102	HVB20DI	HD5-1000	DC302I	20GA-DI
C51	.0047	600	16-47257						GEM-16247	10%
C52	1	400	16-10448		P488N-1		DF-104	CUB4P1	GEM-401	47M-P1
C53	.047	600	16-47348		P488N-047		DF-503	CUB4S47	GEM-4147	47M-S47
C54	033	600	16-33357							
C55	.047	400	16-47348		P488N-047		DF-503	CUB4S47	GEM-4147	47M-S47
C56	.047	300	16-47338		P388N-047		DF-503	CUB2S47	GEM-4147	27M-S47
C57	10000		30-45-1		BPD-010	DD-103	BYA5DI	ED-01	DC5II	5HK-DI
C58	.047	400	16-47348		P488N-047				BC5647J	48F-S47
C59	.022	200	16-22348		P288N-022		BC2S22J	ED-02	AC6S22	28E-S22
C60	22	200	16-22428		P288N-22		BC2P22J		AC6S222	28E-P22
C61	25-280		19-183-0							
C62	390		17-39319			D6-391	5RS739	ED-390		MS-339 10%
C63	01	1000	20-97-0							
C64	1000		17-10219		1464-001		1R5DI	ED-1000	MCD253	MS-21 10%
C65	047	200	16-47328		P288N-047		DF-503	CUB2S47	GEM-4147	27M-S47
C66	18	4000	15-180414							N750
C67	056	600	16-56357							10%
C68	68	3000								5% ③
C69	047	600	20-4471							
C70	047	800	20-4471							
C71	1000	1000			DAC-2	DD30-102	BYA10DDM	HD5-1000	DC302L	SGA-DI ④

CAPACITORS (cont)

ITEM No	RATING: CAP	VOLT	SILVERTONE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C72	10000	1500	20-106-0		DAC-27	DD6-103	HV6103		GEM-1611	BL-S10 $
C73	047	600	20-647-1							

1 Not used in some versions
2 Some versions may use .1mfd ② 300V (Part #16-10423) in this application.
3 Value of this part may vary. Replace with exact duplicate
4 In some versions this is part of a component combination unit (Part #13-17-3).
5 Some varions use 4000mmf (Part #20-98-0) in this application.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	34-284-0	B-80	A47-500K-2	Q13-133	TA55A	Volume
B	Shaft			Not Req.	KNS-3	Not Req.	Not Req.	
R2A	250K	½	34-184-2					Tone
B	Switch							Phono-TV
R3	2000	½	34-107-1	B-3		Q11-201		Contrast
R4A	1.5meg	½	34-106-1	B-742	A47-1.5meg-8	Q11-158	TA155L	Vert. Hold
B	Shaft			Not Req.	KNS-3	Not Req.	Not Req.	
R5A	100K	½	34-108-1	B-60	A47-100K-8	Q11-138	TA15L	Horiz. Hold
B	Shaft			Not Req.	KNS-3	Not Req.	Not Req.	
R6	100K	½	34-104-1					Brightness
R7A	3000Ω	½	34-93-1	B-8	A47-3000-8	B11-113	PTA35SL	Vert. Lin.
B	Shaft			Not Req.	FKS-1/3	TMS-K11	Not Req.	
R8A	5meg	½	34-91-1	B-86 *	A47-4meg-8*			Height with 1.2meg stop
B	Shaft			Not Req.	FKS-1/3			
R9	4meg	½	34-103-1					AGC

* Use 1meg resistor in series with the right hand terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING: OHMS	WATT	SILVERTONE PART No	NOTES
R10	12K		108-123	
R11	10K		108-103	
R12	22K		108-223	
R13	4700Ω		108-473	
R14	220K		111-224	
R15	2200Ω		108-222	
R16	15K		108-153	
R17	6200Ω		108-622	
R18	5600Ω		60-56201	
R19	39K		60-33930	
R20	330Ω		60-33102	
R21	56Ω		60-56001	
R22	12K		60-12301	
R23	1000Ω		60-10302	
R24	33KΩ		60-33103	
R25	47Ω		60-47001	
R26	47K		60-47301	
R27	1000Ω		60-10202	
R28	220Ω		60-22101	
R29	4700Ω		60-47201	
R30	3300Ω	4	61-3-1	
R31	1200Ω	1	60-12211	
R32	100K		60-10402	
R33	330K		60-33401	
R34	470K		60-47401	

ITEM No	RATING: OHMS	WATT	SILVERTONE PART No	NOTES
R35	22K		60-22302	
R36	27K	4	61-3-1	
R37	47K	1	60-47312	
R38	100K		60-10401	
R39	1800Ω	4	61-4-1	
R40	820K		60-82401	Note 1
R41	1MΩ		60-10501	
R42	1.5meg		60-15501	
R43	6800Ω		60-68201	
R44	2.2meg		60-22501	
R45	1500Ω		60-15201	
R46	560Ω			Note 1
R47	560Ω			Note 1
R48	6800Ω	2	60-6822E	
R49	470K		60-47401	Note 2
R50	1000Ω			Note 1
R51	47000		60-47201	
R52	1800Ω	15	61-2-20	
R53	18K	2	60-18321	
R54	1300Ω	10	61-14	
R55	4700	1	60-47111	
R56	4.5Ω	10	61-115	
R57	4.7meg		60-47502	Note 2
R58	4.7meg		60-47502	

Note 1. Value of this part may vary. Replace with exact duplicate.
Note 2. Not used in some versions.
Note 3. In some versions this is part of a component combination (Part #13-17-3).

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T1	117V	6.3V ② 5.6A	6.3V ③ 3.0A	6.3V ③ 2.2A	80-3-5A 1						

① Alternate part number 80-7-5.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	SILVERTONE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T2	Vert. Osc	B-80-1	B6702	A-3003	V405	A-8125	26A03	A-97X	
	Alt. Vert. Osc.	80-1-7							
T3	Vert. Output	80-3-77	Z1806 ①	A-3039 ①	V312 ①	A-8141 ①	26854 ①	A-104X ①	
	Alt. Vert Output	80-3-2							
T4A	Yoke-Horiz (20MH)	D80-1-4L ②	DF60T ② ③	MDF 92 ② ④	Y90F10/43 ③	DY-16A ③	Y-18 ③ ④	Y-41 & NW3 ③	
B	(90°)-Vert. (29MH)								
	Alt Yoke	80-1-4 ②							
M1	Rear Cover & Centering Device	63-938							
	Alt. Rear Cover & Centering Device	63-1034							
	Yoke Clamp	22-2-3							
	Alt Yoke Clamp	22-5-3							
T5	Horiz Output	D80-2-3A		HVO-136	X144 *	HO-274 *	FLY-127 *	D-122 *	
	Alt. Horiz. Output	80-2-3		HVO-136	X144 *	HO-274 *	FLY-127 *	D-122 *	

① Drill new mounting hole(s).
② Includes rear cover, center device and plug
③ Connect yoke terminal #3 to yoke plug #7, yoke terminal #1 to yoke plug #4 Use original rear cover and centering device and width sleeve.
④ Use original horizontal damping network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	4	4	4	4	4	4
3	3	3	3	3	3	3
2	2	2	2	2	2	2
1	1	1	1	1	1	1
A	A	A	G	A	A	A
G	G	G	A	G	G	G

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	4200Ω	2.5Ω	80-34-1	Z1008	A-2902	A-3849	34H61	S-53X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	NOTES
SP1	3" x 14"	PM	6-8Ω	33-322-4 ①		① Phase
SP2	6"	PM	6-8Ω	33-318-4 ①	4A0T27.4 ①	
SP3	4"	PM	6-8Ω	33-315-4 ①	4A0T27.4 ①	

COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L1	Ant. Trans.	2309-5	
L2	Ant. Coil	310-5	Channel 13
L3	Ant Coil	310-5	Channel 13
L4	RF Coil	313-7	Channel 13
L5	RF Choke	301-25	
L6	Mixer Grid Coil	312-6	Channel 13

ITEM No.	USE	SILVERTONE PART No.	NOTES
L7	Osc Coil	300-4	Channel 13
L8	RF Choke	300-16	
L9	Fil Choke	300-20	
L10	Mixer Plate Coil	2110-9	

ITEM No	USE	SILVERTONE PART No.	Meissner PART No	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L11	1st Video IF	10-35-2					Includes 41.25MC Trap
L12	2nd Video IF	10-9-2					Includes 47.25MC Trap
L13	3rd Video IF	10-10-3					
L14	4th. Video IF	10-60-2					
L15	Resonant Choke	10-65-1					13 Microhenries
L16	Series Peaking Coil	10-12-1	19-3125	TV-195	6153	VP-6	120 Microhenries
L17	Shunt Peaking Coil	10-85-1	19-3250	TV-198	6130	VP-8	269 Microhenries
L18	4.5MC Trap	10-94-1					
L19	Series Peaking Coil	10-128-1	19-4200 *	TV-197 *	6154 *		220 Microhenries, wound on 10K resistor
L20	Shunt Peaking Coil	10-127-1	19-3300	TV-200	6152	VP-7	330 Microhenries
L21	Sound IF	10-94-1					
L22	Ratio Det.	10-16-0					
L23	RF Choke	10-124-1		SW-631			4.7 Microhenries

* Parallel with 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI	SEC.	SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No	NOTES
L24	76Ω *		10-8-5						* Tapped @ 58Ω Horiz waveform coil-20Ω

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Antenna Isolation	470mmf, 6-1meg	330-1	Centralab Sprague	RC-471 R-9175
K2	Antenna Isolation	470mmf, 6-1meg	330-1	Centralab Sprague	RC-471 R-9175
K3	Sound IF	5000mmf, 580mmf 10%, 2000mmf, 18K, 22K, 18K, 220Ω, 390Ω, 680K	13-5-5	Erie	710
K4	Audio Circuit	10000mmf, 5000mmf, 5000mmf, 5000mmf, 270K, 270K, 2.2meg, 470K, 10meg, 110Ω, 110Ω	13-1-5	Erie	713
K5	Sync Network	150mmf 10%, 10000mmf, 33K, 220K, 270K, 2700Ω, 2.2meg	13-6-5	Erie	708-05
K6	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω, 2200Ω	13-2-0	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-104 1157MG 1405-01 V-1
K7	Horiz. Sync & Feedback	5000mmf, 100mmf 10%, N1400, 2000mmf, 47mmf 10% N080, 180 mmf 10%, 8200Ω, 150K, 820K, 1meg, 39K, 28K, 33.5K, 33.5K, 100K, 10K, 1800Ω, 2200Ω	13-3-5	Erie	717
K8	Horiz. Osc. Circuit	19.5K, 100K, 150K, 150K, 2.7meg, 19.5K, 8200Ω	13-4-5	Erie	708-06

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SILVERTONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.270A	83-880 ①②	1023A ①	1N1007 ③	MR350 ①	350A ① M500 ④	① Selenium type. ② Alternate part #83-329
M2	.270A	83-880 ①②	1023A ①	1N1007 ③	MR350 ①	350A ① M500 ④	③ Silicon type. ④ Germanium type.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M3	33-235-0	53-T	GD-J	56	PT-2	Models 8190, 8191, 8192, 8193
	33-286-0			56	PT-2	Models 8190A, 8191A, 8192A, 8193A

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M4	83-1172	†S-66 or †♦S-66SD or ♦S-66D	†W75TPS or †♦W75DS or ♦W75TPD	Models 8190, 8191, 8192, 8193
	83-1178	†S-61 or †♦S-61SD or ♦S-61D	†W77TPS or †♦W77DS or ♦W77TPD	Models 8190A, 8191A, 8192A, 8193A

* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M5	Lamp	89-7	Channel Indicator, Type #47
M6	Tuner	95-139-0	VHF - Ch. 528.52100, 101, 102
	Tuner	95-137-0	VHF - Ch. 528.52110, 111, 112
	Tuner	95-142-0	UHF - Ch. 528.52110, 111
	Tuner	95-135-0	UHF - Ch. 528.52112
M7	Switch	69-218-0	On-off, SPST
M8	Switch	69-250-0	Power Tuning, SPST
M9	Switch	69-263-0	Channel Indexing
M10	Width Sleeve	83-1052	
M11	Centering Device	83-936	Includes yoke cover
	Centering Device	83-1034 *	Includes yoke cover
M12	Motor	59-104	Channel Tuning
	Motor	59-106 *	Channel Tuning
M13	Circuit Breaker	43-1-2	
	Magnet	27-66-2	Beam alignment used with some picture tubes
	Printed Board	84-4312	Sync section, less tubes

* Alternate part number.

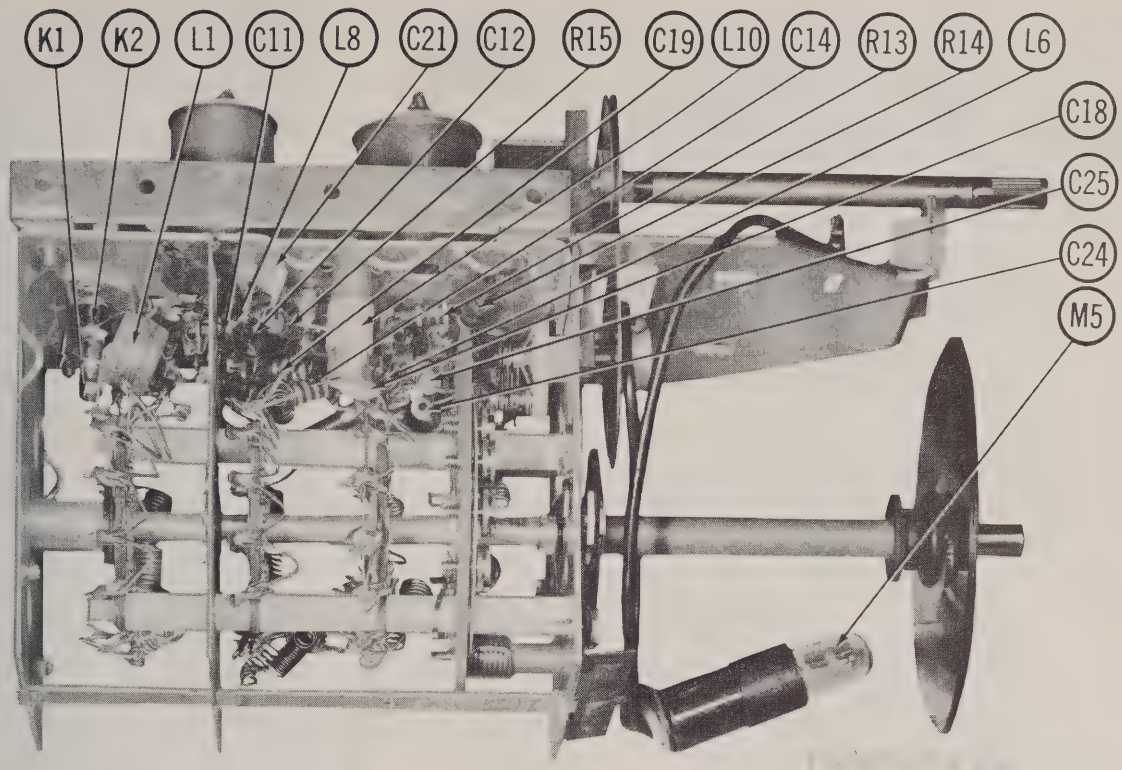
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	48-142-0	
Mask	40-8-4	
Knob	52-914-0	Channel Selector - Models 8190, A, 8192, A
Knob	52-913-0	VHF Channel Selector - Models 8191, A, 8193A
Knob	52-927-0	UHF Channel Selector - Models 8191, A, 8193A
Drum	52-925-0	UHF Channel Indicator - Models 8191, A, 8193A
Knob	52-880-0	(6 used)
Pushbutton	52-912-0	Power Tuning
Pushbutton	52-911-0	On-off
Cabinet	42-41-0	Models 8190, A
Cabinet	42-42-0	Models 8191, A
Cabinet	42-43-0	Models 8192, A
Cabinet	42-44-0	Models 8193, A

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



RF TUNER-LEFT SIDE

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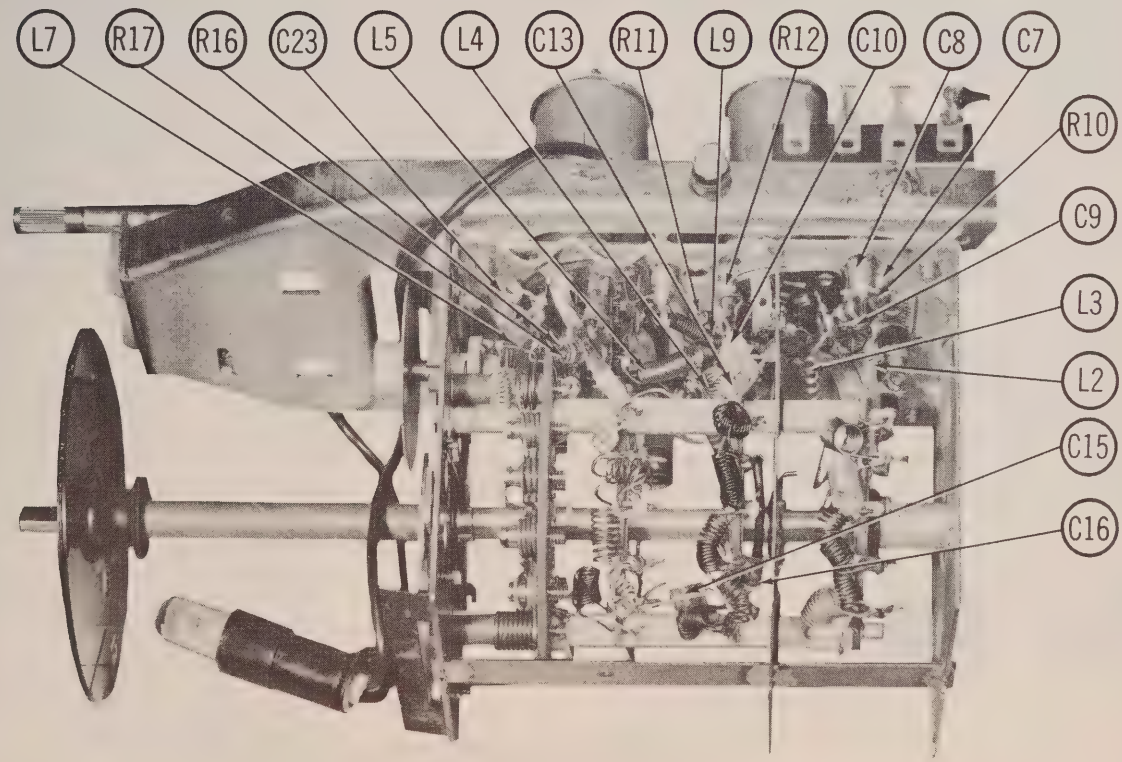
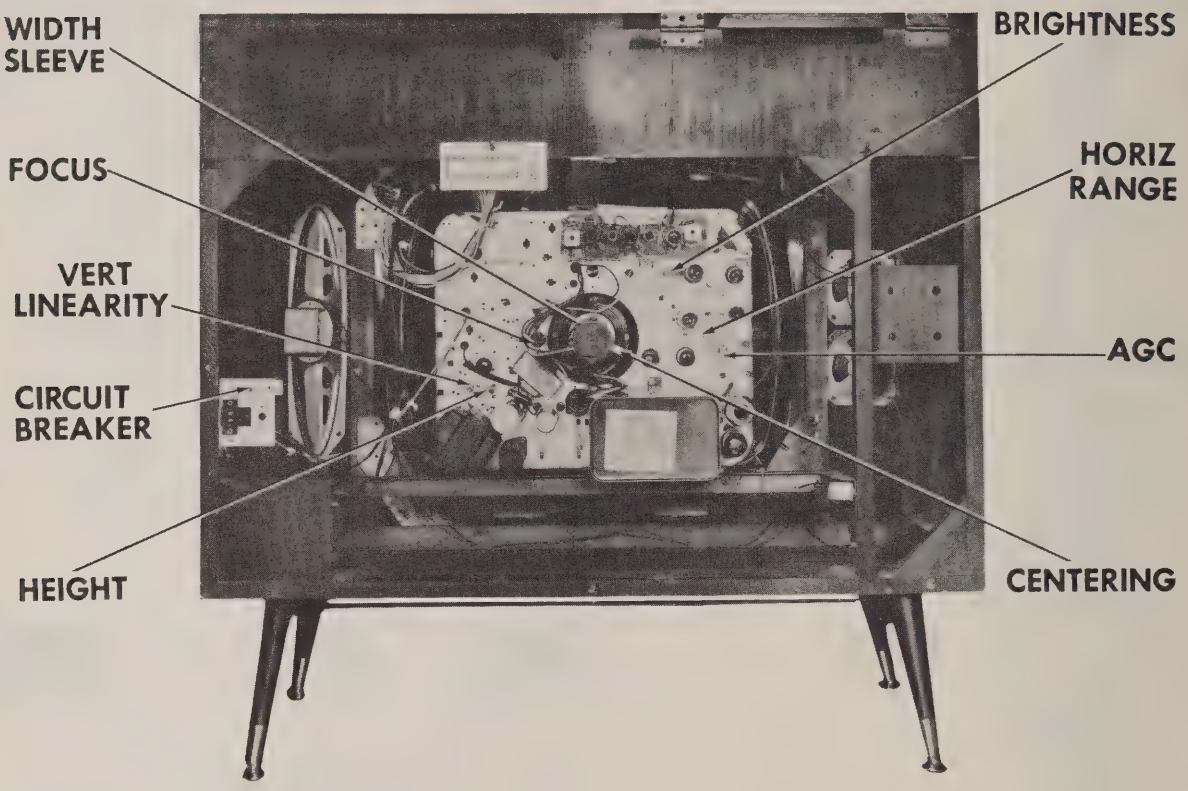


RF TUNER-RIGHT SIDE

FOLDER 3



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

1. Turn the horizontal range trimmer (B3) fully clockwise.
2. Tune in a station and adjust the horizontal hold control until the picture synchronizes horizontally. If the picture cannot be synchronized with the horizontal hold control, set it to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.
3. If step 2 is not successful, turn the horizontal waveform slug (B2) several turns counter clockwise. Radjust B1 until the picture synchronizes horizontally.

HORIZONTAL WAVEFORM ADJUSTMENT

Connect the vertical amplifier of an oscilloscope thru a low capacity probe to point Ⓖ . If necessary, adjust the horizontal waveform slug (B2) for a waveform similar to Fig. 3 with the sharp peak approximately 10% higher in amplitude than the rounded peak. Keep the picture in sync during this adjustment with the horizontal hold control or B1. Remove the scope connection.

HORIZONTAL RANGE TRIMMER ADJUSTMENT

1. Turn the horizontal hold control fully clockwise. Turn the horizontal range trimmer (B3) fully clockwise, then back 1/4 turn counter clockwise. Turn B1 counter clockwise until the picture is displaced to the right. Turn B1 clockwise until the picture just locks in sync.
2. Set the horizontal hold control fully clockwise. Momentarily switch off channel and back again. The picture should lose sync. Turn the horizontal hold control slowly counter clockwise and note the number of diagonal bars present just before the picture falls into sync. If less than two diagonal bars are visible, turn B3 SLIGHTLY counter clockwise. If more than three diagonal bars are visible, turn B3 SLIGHTLY clockwise. Repeat steps 1 and 2, if necessary.

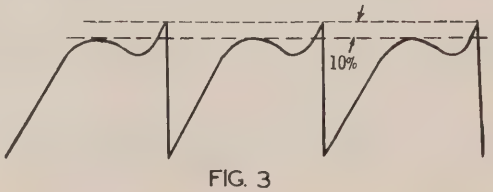


FIG. 3

PHOTOFACT* Folder

SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)

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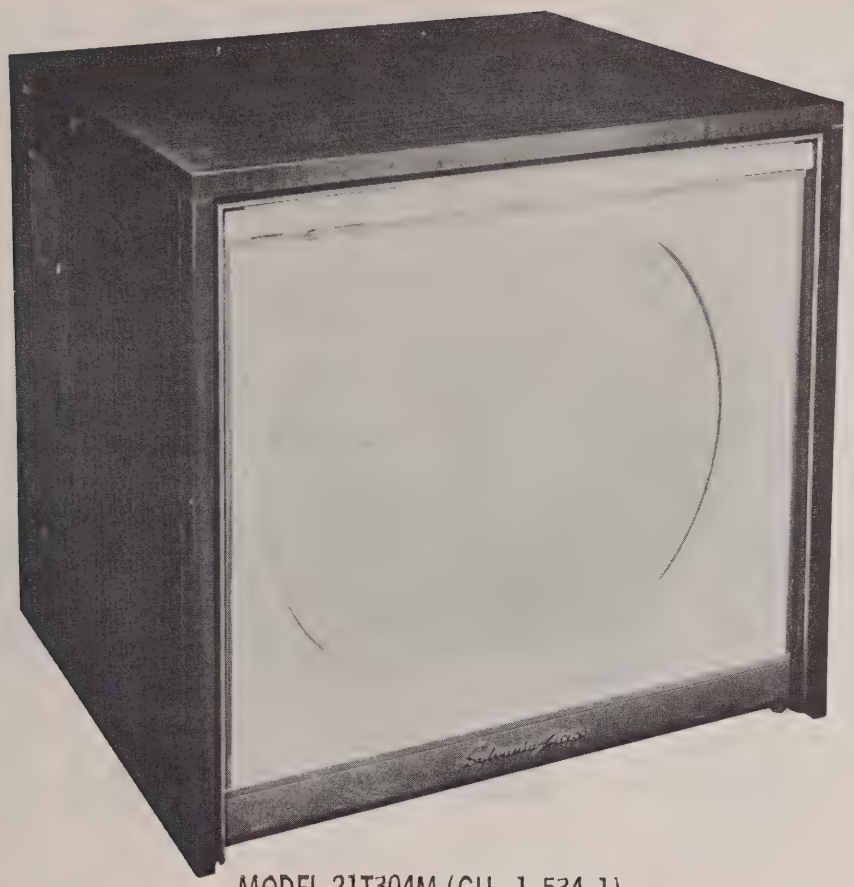
SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)



MODEL 21T304M (CH. 1-534-1)

SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)

TRADE NAME	Sylvania Models 31C606, 21T304 Series (Ch. 1-534-1, -2)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Television Div., 700 Ellicott St., Batavia, N.Y.
TYPE SET	Color Television Receiver
TUBES	Twenty-nine
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 420 Watts, 4.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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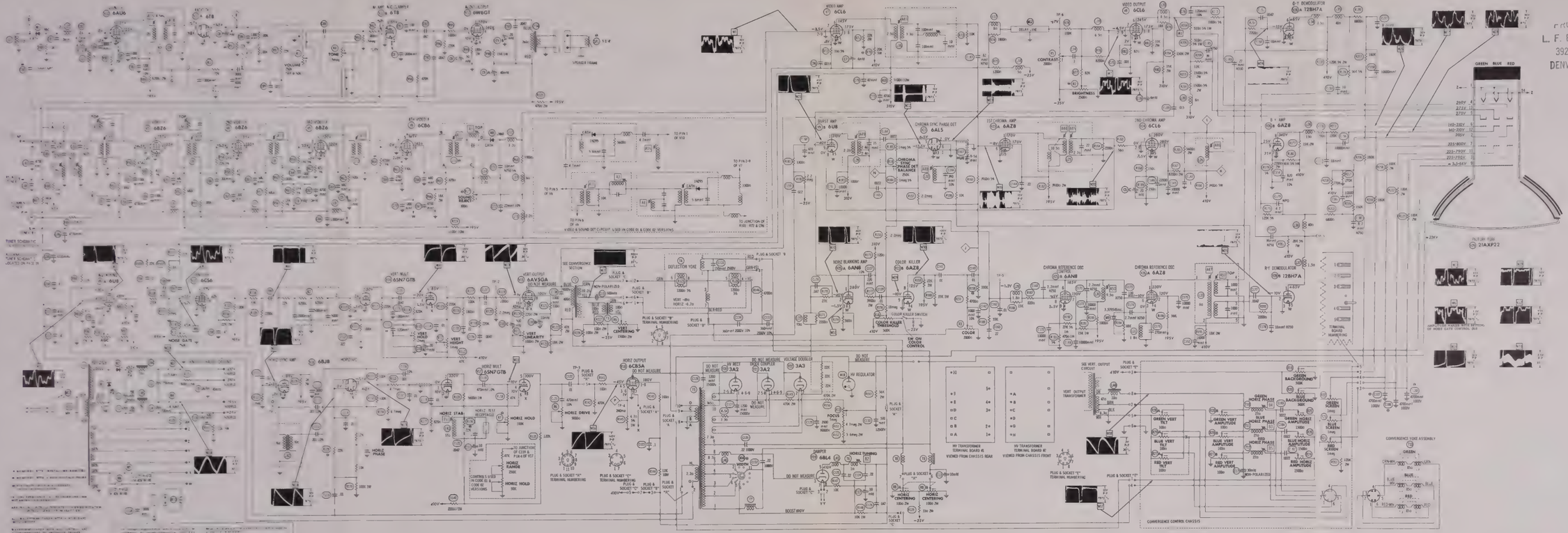

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SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)

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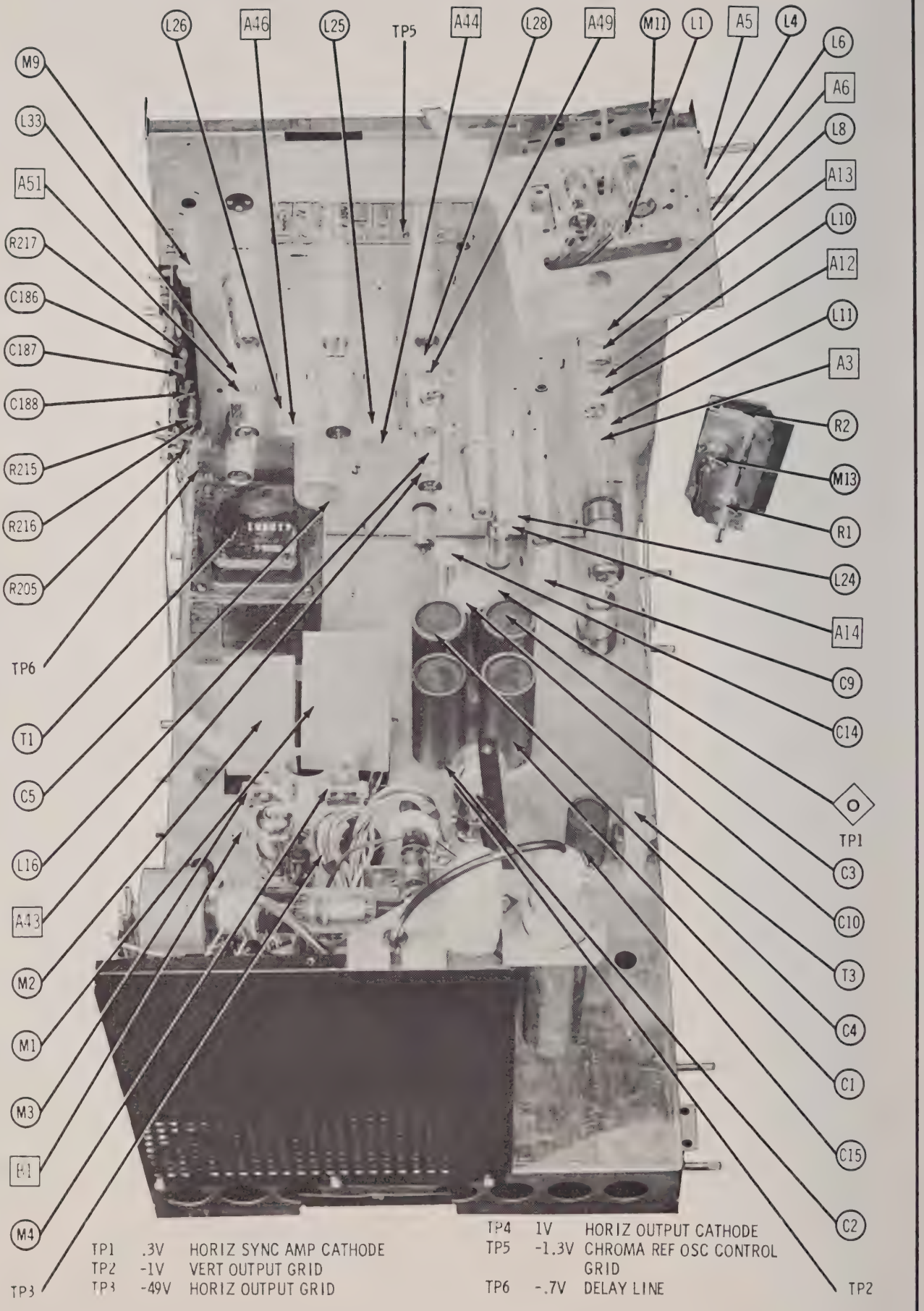
SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)

BLOCK DIAGRAM



TP1	.3V	HORIZ SYNC AMP CATHODE
TP2	-1V	VERT OUTPUT GRID
TP3	-49V	HORIZ OUTPUT GRID
TP4	1V	HORIZ OUTPUT CATHODE
TP5	-1.3V	CHROMA REF OSC CONTROL GRID
TP6	-.7V	DELAY LINE

CHASSIS TOP VIEW

MISCELLANEOUS ADJUSTMENTS

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Tune in a strong TV signal, preferably with a test pattern. Adjust the fine tuning for best picture.
2. Turn blue and green screen and background controls fully counter clockwise. Turn noise gate (R15) and color killer threshold control (R16) fully counter clockwise.
3. Turn the red screen control fully clockwise.
4. Adjust the vertical size, vertical linearity, horizontal width and horizontal drive for normal picture.
5. Connect a clip lead from point ⓪ to chassis.
6. Connect a short between the two pin sockets of the "Horiz. Stab. Coil" socket located on top of the main chassis near the rear.
7. Adjust the horizontal hold control until the picture moves slowly back and forth across the screen with the blanking bar vertical. (On sets containing horizontal range controls, set the horizontal hold control to the center of its range and adjust the horizontal range control until the picture floats back and forth).
8. Remove the short from the horiz. stab. coil socket.
9. Adjust the horizontal stabilizer slug (B1) until the picture again moves back and forth slowly across the screen with the vertical blanking bar vertical.
10. Remove the clip lead from point ⓪.
11. Rotate the channel selector to a blank channel, then return to the original channel. The picture should immediately fall into sync. If the picture does not fall into sync immediately, SLIGHTLY readjust hold control and repeat this step.
12. Readjust width switch and focus for normal picture.
13. Adjust the horizontal drive control (R6) clockwise until a bright vertical line appears, then turn counter clockwise for best horizontal linearity at the center of the screen.
14. Connect the DC probe of a VTVM to point Ⓟ. Common to chassis. Adjust the horizontal tuning (linearity) slug (B2) for MINIMUM deflection on the VTVM, then turn B2 counter clockwise until a reading of .94 volts is obtained. Leave B2 in this position. Return blue and green screen and background controls to normal position.

AGC AND NOISE GATE ADJUSTMENTS

1. Tune in the strongest local station and adjust fine tuning for best picture.
2. Adjust the contrast and brightness controls for normal picture.
3. Turn the AGC and noise gate controls fully counter clockwise.
4. Slowly turn the AGC control clockwise until the best picture is obtained without signs of overload (tearing or distortion).
5. Turn the noise gate control clockwise for best picture without distortion or tearing.

COLOR KILLER THRESHOLD CONTROL ADJUSTMENT

1. Turn to a channel on which no signal is received.
2. Turn killer threshold control (R16) clockwise until colored snow appears; then turn counter clockwise until colored snow just disappears.

COLOR PURITY ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Remove convergence chassis from hangers on cabinet and place on top of cabinet.	
2.	Tune in a TV station, preferably with a test pattern.	
3.	Color Killer Threshold Control	Fully counter clockwise.
4.	Contrast Control	Normal picture.
5.	Brightness Control	Normal picture.
6.	Color Control	Fully counter clockwise.
7.	Static Convergence Magnets	Close convergence in center of picture.
8.	Field-Equalizing Magnets	MINIMUM (All the way out).
9.	Contrast Control	MINIMUM.
10.	If necessary, degauss the picture tube at this point.	
11.	Blue and Green Screen Controls	Fully counter clockwise.
12.	Blue and Green Background Controls	Fully counter clockwise.
13.	Red, Green and Blue Horizontal Amplitude Controls	Fully counter clockwise.
14.	Red, Green and Blue Vertical Amplitude Controls	Fully counter clockwise.
15.	Red, Green and Blue Vertical Tilt Controls	Mid-range.
16.	Brightness Control	Maximum.
17.	Red screen Control	Clockwise until a dim red screen is obtained.
18.	Deflection Yoke	Loosen the two wing nuts and slide yoke to the rear on neck of tube.
19.	Purity Magnet Assembly	Spread the tabs apart and rotate the entire assembly for best red purity in center of screen.
20.	Deflection Yoke	Move yoke forward until the best red field is obtained over entire screen. Disregard the impure colors at extreme edges. If necessary, repeat steps 19 and 20.
21.	Red Screen Control	MINIMUM.
22.	Blue and Green Screen Controls	Check for neck shadow and purity of blue and green fields by alternately turning up the blue and green screen controls. If either field is impure, repeat steps 17 thru 22. If neck shadow is observed, it may be necessary to recenter the yoke.
23.	Deflection Yoke	Secure the yoke by tightening the two wing nuts.
24.	Red, Green and Blue Screen Controls	Fully counter clockwise.
25.	Brightness Control	Maximum.
26.	Red Screen Control	For a dim red raster.
27.	Blue and Green Screen Controls	Adjust for a white raster. If necessary, repeat steps 25 and 26.
28.	Field-Equalizing Magnets.	If an impure white is noted at edge of raster, turn the magnet nearest the impurity until a white field is obtained.

CONVERGENCE ADJUSTMENTS

STEP	ADJUST	REMARKS
1.	Connect a white dot/crosshatch generator to the receiver.	
2.	Contrast and brightness Controls	Adjust for good dot or crosshatch pattern on screen. While making convergence adjustments, keep pattern in focus at all times.
3.	Static Convergence Magnets	If necessary, readjust for convergence in center of raster.
4.	Blue-lateral and Green-static Convergence Magnets	Misadjust to obtain a SLIGHT misconvergence of the center vertical dots or lines.
5.	Red and Green Vertical Amplitude, and Red and Green Vertical Tilt Controls	Adjust until the center vertical red and green dots or lines are parallel with the center blue row.
6.	Blue-lateral and Green-static Convergence Magnets	Adjust for convergence of the center vertical dots or lines. If necessary, repeat steps 3 thru 6.
7.	Blue-static Convergence Magnet	Adjust to place the center of the blue horizontal dots or lines a SLIGHT distance above or below the horizontal red and green dots or lines.
8.	Blue Vertical Tilt and Amplitude Controls	Adjust for equal displacement of blue horizontal dots or lines above or below green and red horizontal dots or lines.
9.	Blue-static Convergence Magnet	Adjust to reconverge blue horizontal dots or lines on red and green horizontal dots or lines.
10.	Blue Horizontal Amplitude Control	Maximum.
11.	Blue Horizontal Phase (B3)	Adjust for maximum downward displacement of blue horizontal dots or lines in center of screen.
12.	Green Horizontal Amplitude Control	Maximum.
13.	Green Horizontal Phase (B4)	Adjust for maximum upward displacement of green horizontal dots or lines in center of screen.
14.	Red Horizontal Amplitude Control	Maximum.
15.	Red Horizontal Phase (B5)	Adjust for maximum upward displacement of red horizontal dots or lines in center of screen.
16.	Blue, Red and Green Horizontal Amplitude Controls	Adjust for equal displacement of the blue, red and green horizontal dots or lines along the plane of the center horizontal line.
17.	Blue-lateral Magnet and the Red, Green, and Blue static Convergence Magnets	Adjust for close convergence in center of screen.
18.	Red and Green Vertical Tilt and Amplitude Controls	Recheck the vertical dots or lines and touch-up any misconvergence.
19.	At this point, the dot or crosshatch pattern should be converged over the entire portion of the screen ; however, in most cases, SLIGHT touch-up adjustments of all controls will benefit.	

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Disconnect the picture tube, yoke, high voltage lead, focus lead and the convergence chassis. Insert a 250Ω 20 watt resistor in series with the blue lead of the selenium rectifier (M2).

VIDEO IF ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the negative lead of a 3.6 volt bias supply to point Ⓑ. Positive to chassis.
Connect separate marker generator thru a 1000mmf capacitor to point Ⓒ. Low side to chassis. Keep marker generator output at a MINIMUM to prevent distortion of the response curve.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	Set to any local color channel	39.75MC	Same as sweep generator	Vert. Amp. thru 33K to pin 2 (grid) of 6CL6 (V7). Low side to chassis.	A1	Adjust for MINIMUM gain at marker.
2.	"	"	"	47.25MC	"	"	A2	"
3.	"	"	"	41.25MC	"	"	A3	"
4.	"	"	"	"	"	"	R17	Adjust for MINIMUM gain at marker. Not used in Ch. coded 00, 01, 02, 03.
5.	"	"	"	"	"	"	A4	Adjust for MINIMUM gain at marker. Not used in Ch. coded 04 and higher.
6.	"	"	"	"	"	"	A5	Adjust for MINIMUM gain at marker.
7.	"	"	"	"	"	"	A6	"
8.	"	Across antenna terminals with 120Ω in each lead. Move marker generator connection to ungrounded tube shield floating over mixer-osc. tube (V2). Low side to chassis.	"	39.75MC 41.25MC 42.17MC 43.0MC 45.2MC 47.25MC	"	Vert. Amp. thru detector circuit (Fig. 1) to pin 5 (plate) of 6BZ6 (V3). Low side to chassis. (Connect as shown).	A7, A8, A9	Reduce bias at point Ⓑ to 1 volt. Adjust for maximum gain and symmetry of response similar to Fig. 2. A7 controls 43MC region, A8 is used to peak 44.0MC and A9 sets 42.17 marker at 50%.
9.	"	"	"	39.75MC 41.25MC 42.17MC 42.65MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 33K to pin 2 (grid) of 6CL6 (V7). Low side to chassis.	A10, A11, A12, A13	Increase bias at point Ⓑ to 6 volts. Remove 6CL6 (V7) from its socket. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A11 is used to position 45.75MC marker at 50%. A13 positions 42.17MC marker at 60% and A12 controls tilt of curve. Disconnect test equipment and replace V7 in its socket.

SOUND IF ALIGNMENT

Connect the negative lead of a 30 volt bias supply to point Ⓑ. Positive to chassis.
Connect the two matched 100K (±1%) resistors in series from point Ⓔ to chassis. The junction of these two resistors is alignment point Ⓕ as shown on the schematic.
Use negative scale on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01mfd	High side to point Ⓓ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓔ. Common to chassis.	A14, A15, A16	Adjust alternately for maximum deflection.
11.	"	"	"	"	DC probe to point Ⓖ. Common to point Ⓕ.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓐ. Positive to chassis.
Remove the tuner cover and set the fine tuning to the center of its range by setting the capacitor plates at half mesh.
Unsolder the connections from pin 5 (plate) of the 1st.video IF amplifier (V3) and connect a 330Ω resistor from pin 5 (plate) to pin 6 (screen) of V3. Remove the 2nd. video IF amplifier tube (V4) from its socket.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	215.75MC	13	Vert. Amp. thru detector probe (Fig. 4) to pin 5 (plate) of 6BZ6 (V3). Low side to chassis.	A17	Adjust to place sound marker in trap notch as in Fig. 5.
			85MC	87.75MC	6		A18	
			79MC	81.75MC	5		A19	
			69MC	71.75MC	4		A20	
			63MC	65.75MC	3		A21	
			57MC	59.75MC	2		A22	

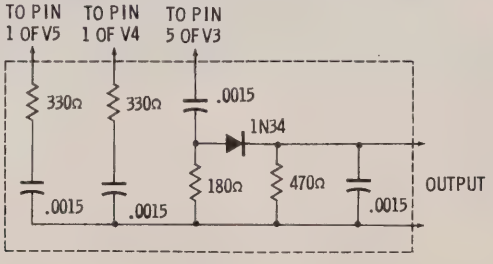


FIG. 1

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (A). Positive to chassis.
Leave circuit altered as under "VHF Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru detector probe (Fig. 4) to pin 5 (plate) of 1st. video IF amp. (V3). Low side to chassis.	A23, A24, A25	Adjust A23 for maximum gain, A24 for proper marker positions and A25 for flat-topped response similar to Fig. 6.
14.	"	"	177MC	175.25MC 179.75MC	7	"	A26, A27	Adjust for maximum gain and symmetry of response similar to Fig. 6 with markers as shown.
15.	"	"	207MC	205.25MC 209.75MC	12	"		Check each channel for response similar to Fig. 6. If not within limits, repeat steps 13 and 14. If necessary, make compromise adjustment of A23 thru A27 for best acceptable response.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
16.	"	"	85MC	83.25MC 87.75MC	6	"	A28, A29, A30	Adjust in numerical order for response curve similar to Fig. 6. First adjustment for maximum gain, next for proper marker positions and third for flat-topped response.
17.	"	"	79MC	77.25MC 81.75MC	5	"	A31, A32, A33	"
18.	"	"	69MC	67.25MC 71.75MC	4	"	A34, A35, A36	"
19.	"	"	63MC	61.25MC 65.75MC	3	"	A37, A38, A39	"
20.	"	"	57MC	55.25MC 59.75MC	2	"	A40, A41, A42	Adjust in numerical order for response curve similar to Fig. 6. First adjustment for maximum gain, next for proper marker positions and third for flat-topped response. Restore circuit to normal operation.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

CHROMA ALIGNMENT

Remove the G-Y and R-Y Demodulator tube (V28) from its socket. Remove the B-Y amplifier and chroma ref. osc. tube (V26) from its socket.
Connect the negative lead of a 28 volt bias supply to point (B). Positive to chassis.
Connect the negative lead of a 28 volt bias supply to pin 9 (grid) of the 6U8 (V9). Positive to chassis.
Connect the negative lead of a 7 volt bias supply thru a 100K resistor to point (J). Positive to chassis.
Use video sweep generator for the following alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
21.	.01mfd	High side to pin 9 (grid) of 6CL6 (V7). Low side to chassis.	3MC (6MC Swp)	4.1MC	Any non-interfering channel	Vert. Amp. thru detector probe to pin 1 (plate) of 6AZ8 (V23). Low side to chassis.	A43	Adjust for maximum gain at marker. Connect a 680Ω resistor between pins 1 and 2 of chroma amp. (V23) after adjusting A43.
22.	"	"	"	3.2MC 3.58MC 4.1MC	"	"	"	Readjust for response curve similar to Fig. 7 with markers as shown.
23.	"	"	"	3.0MC 3.58MC 4.1MC	"	Vert. Amp. thru detector probe to pin 6 (plate) of 6CL6 (V24). Low side to chassis.	A44, A45	Remove 680Ω resistor connected to V23 and connect between points (K) and (L). Adjust A44 and A45 for response similar to Fig. 8. Remove the 680Ω resistor.
24.	"	"	"	3.0MC 3.1MC 3.58MC 4.1MC	"	Vert. Amp. thru detector probe to point (M). Low side to chassis.	A46	Adjust for response curve similar to Fig. 9. Restore set to normal operating condition.

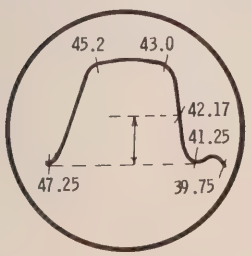


FIG. 2

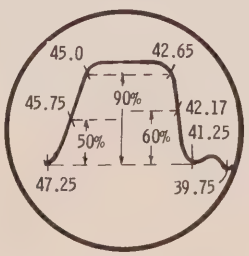


FIG. 3

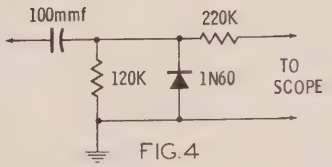


FIG. 4

ALIGNMENT INSTRUCTIONS (cont)

CHROMA AFC ALIGNMENT

Turn color killer threshold control (R16) fully counter clockwise.
Set the hue control to the center of its range.
Set the color control to the center of its range.
Connect the negative lead of a 5 volt bias supply to point ◇J◇. Positive to chassis.
Connect a clip lead from pin 8 (cathode) of the 6U8 (V9) to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
25.	Direct	Color bar generator across antenna terminals.	Same as channel selector	Any	DC probe to pin 5 (cathode) of 6AL5 (V27). Common to chassis.	A47, A48	Adjust for maximum deflection. After peaking both, turn A47 counter clockwise to reduce the VTVM reading 5%.
26.	"	"	"	"	"	A49	Remove clip lead from V9. Adjust A49 for maximum deflection.
27.	"	"	"	"	Disconnect.	A50	Connect clip lead from point ◇N◇ to chassis. Observe picture tube face and adjust for stationary colors in bar pattern.
28.	"	"	"	"	DC probe to point ◇N◇. Common to chassis.	R18	Remove 6AZ8 (V26) from its socket. Remove clip lead from point ◇N◇. Adjust chroma sync phase det. balance control (R18) for zero reading. (Use low DC scale). Replace V26 and remove bias supply.
29.	"	"	"	"	USE SCOPE. Vert. Amp. to pin 2 (red grid) of picture tube. Common to chassis.		Retouch A50 for R-Y signal similar to Fig. 10.
30.	"	"	"	"	Vert. Amp. to pin 12 (blue grid) of picture tube. Common to chassis.	A51	Adjust A51 for B-Y signal similar to Fig. 10. Repeat steps 29 and 30 to correct any inter-action. Remove all test and alignment equipment.

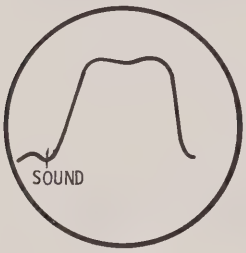


FIG. 5

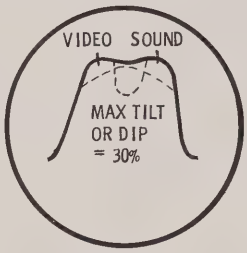


FIG. 6

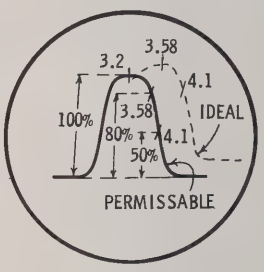


FIG. 7

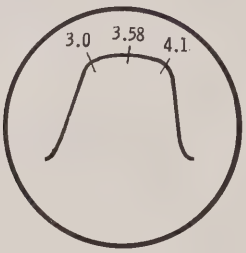


FIG. 8

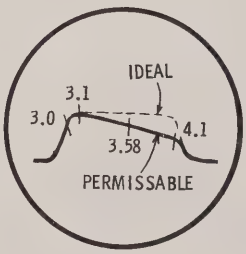


FIG. 9

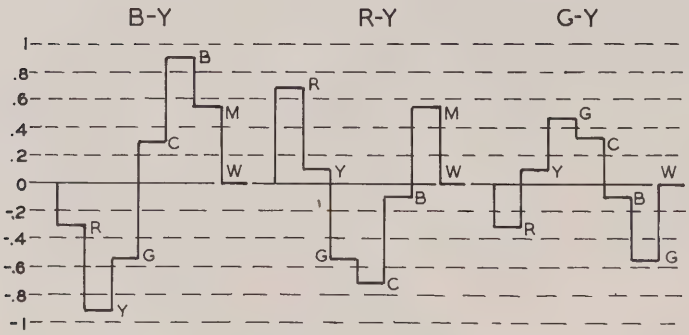
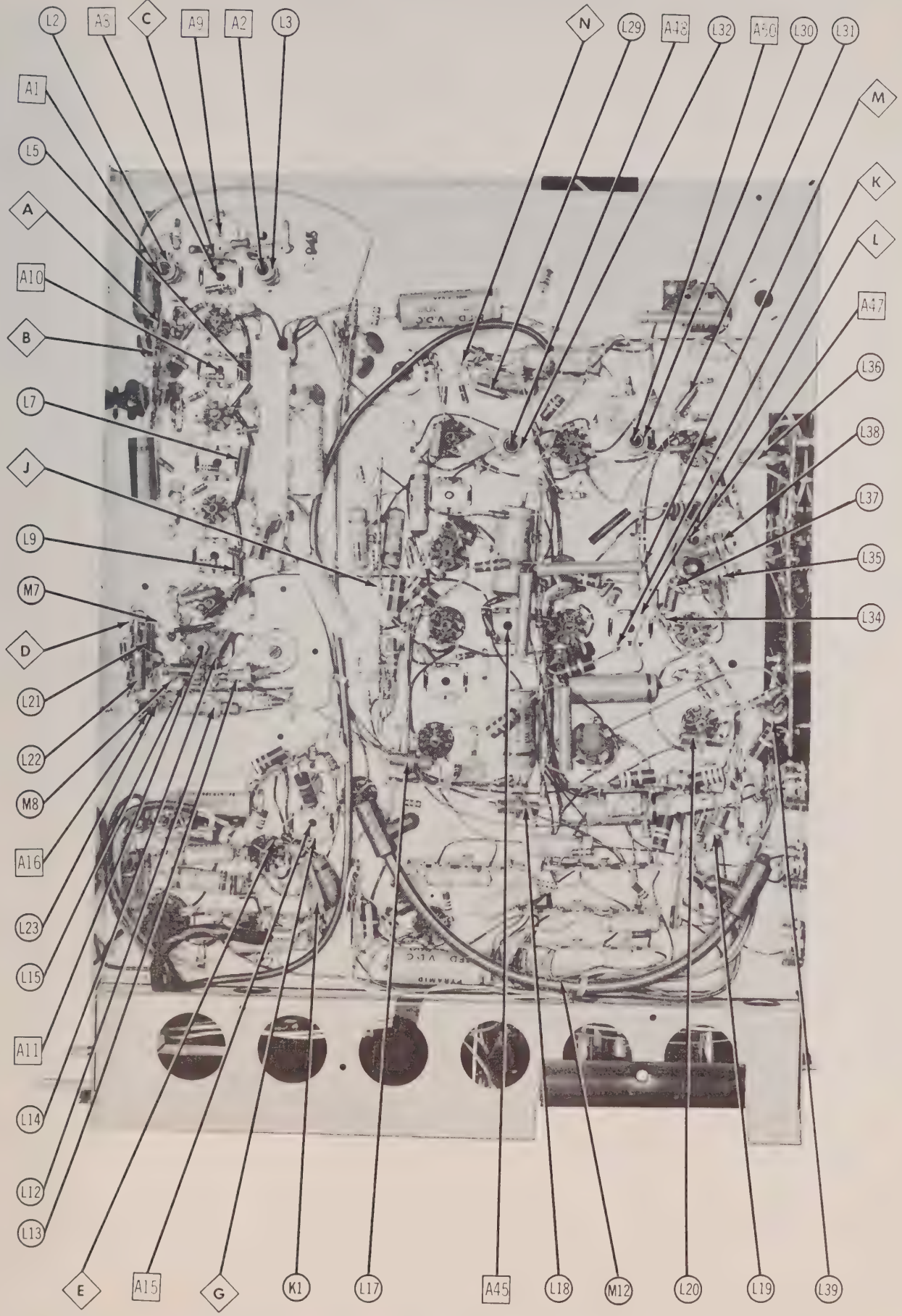


FIG. 10



VERTICAL CHASSIS - INDUCTOR & ALIGNMENT IDENTIFICATION

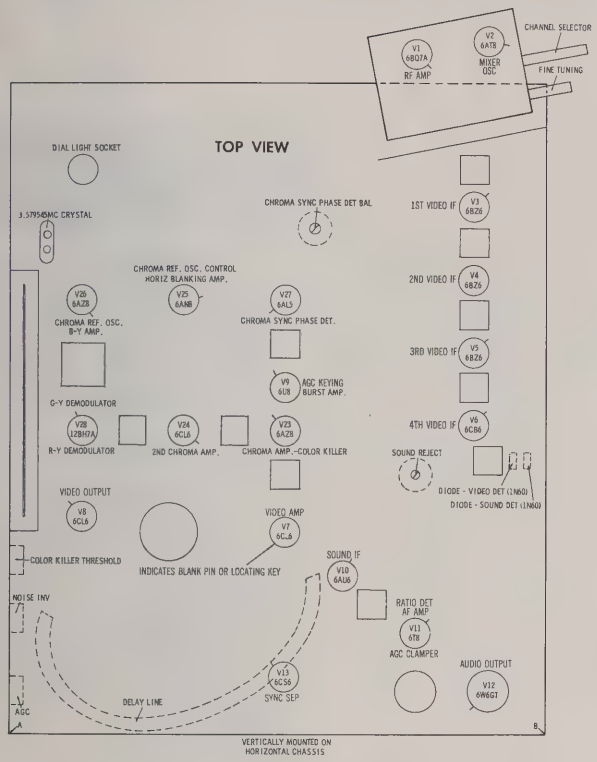
RESISTANCE MEASUREMENTS

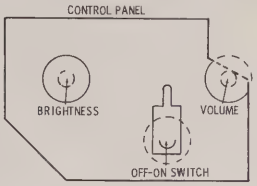
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	
V1	6BQ7A	■ 1000Ω	250K	INF	.1Ω	0Ω	INF	460K	27Ω	0Ω	
V2	6AT8	15K	■ 5700Ω	0Ω	0Ω	.1Ω	■ 3100Ω	■ 13K	0Ω	133K	
V3	6BZ6	30K	47Ω	.1Ω	0Ω	■ 1800Ω	■ 1800Ω	0Ω			
V4	6BZ6	30K	47Ω	.1Ω	0Ω	■ 1800Ω	■ 1800Ω	0Ω			
V5	6BZ6	16K	47Ω	.1Ω	0Ω	■ 2600Ω	■ 2600Ω	0Ω			
V6	6CB6	.1Ω	330Ω	.1Ω	0Ω	■ 1500Ω	■ 1500Ω	0Ω			
V7	6CL6	800Ω	3900Ω	† 12K	0Ω	.1Ω	† 6700Ω	0Ω	† 12K	3900Ω	
V8	6CL6	82Ω	• 45K	† 12K	0Ω	.1Ω	† 5600Ω	0Ω	† 12K	• 45K	
V9	6U8	† 2600Ω	28K	† 12K	0Ω	.1Ω	140K	15K	2.7Ω	2.2meg	
V10	6AU6	5Ω	0Ω	.1Ω	0Ω	■ 8200Ω	■ 8200Ω	120Ω			
V11	6T8	INF	27K	INF	0Ω	.1Ω	460K	0Ω	15meg	■ 950Ω	
V12	6W6GT	NC	0Ω	■ 730Ω	■ 15K	220K	NC	.1Ω	180Ω		
V13	6CS6	• 520K	0Ω	0Ω	.1Ω	■ 30K	■ 22K	2meg			
V14	6SN7GTB	10K	† 270K	1000Ω	• 1.1meg	• † 1meg	1000Ω	.1Ω	0Ω		
V15	6AV5GA	2.2meg	0Ω	• 350Ω	NC	† 400Ω	NC	.1Ω	† 20K		
V16	6BJ8	120K	4.8meg	120K	0Ω	.1Ω	4.8meg	■ 10K	1meg	30Ω	
V17	6SN7GTB	9.4meg	† 7800Ω	820Ω	• 60K	† 120K	820Ω	0Ω	.1Ω		
V18	6CB5A	† 12K	0Ω	4.7Ω	390K	390K	4.7Ω	.1Ω	† 12K	TOP CAP ‡8Ω	
V19	6BL4	NC	NC	INF	NC	† 2.5Ω	NC	INF	INF		
V20	3A2	16meg	NC	NC	NC	16meg	NC	NC	NC	16meg	TOP CAP ‡375Ω
V21	3A2	PINS 1 THRU 9 HAVE INFINITE RESISTANCE									TOP CAP 16meg
V22	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE									TOP CAP INF
V23	6AZ8	■ 3900Ω	■ 3900Ω	0Ω	.1Ω	0Ω	330K	0Ω	■ 13K	3.5meg	
V24	6CL6	300Ω	59Ω	† 12K	0Ω	.1Ω	TP	0Ω	† 12K	59Ω	
V25	6AN8	† 5600Ω	27K	370Ω	0Ω	.1Ω	■ 1000Ω	■ 11K	3meg	470Ω	
V26	6AZ8	† 18K	■ 56K	1.8Ω	.1Ω	0Ω	68K	2000Ω	† 15K	80K	
V27	6AL5	.3Ω	.3Ω	.1Ω	0Ω	4.5meg	0Ω	2.5meg			
V28	12BH7A	† 22K	2200Ω	0Ω	.1Ω	.1Ω	† 70K	2200Ω	0Ω	0Ω	
V29	21AXP22	120K	† 80K	• 530K	† 9500Ω	† 5000Ω	• 125K	• 550K	NC	• 13meg	
		PIN 10 NC	PIN 11 • 550K	PIN 12 • 125K	PIN 13 † 15K	PIN 14 120K					

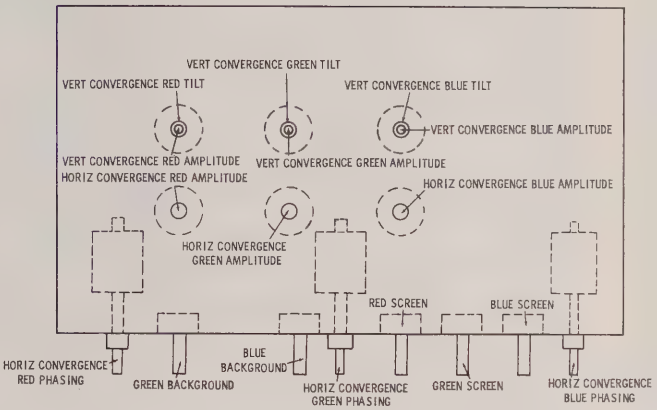
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM 195V SOURCE.
† MEASURED FROM 410V SOURCE.
‡ MEASURED FROM PIN 3 OF V19.
NC NO CONNECTION
TP TIE POINT

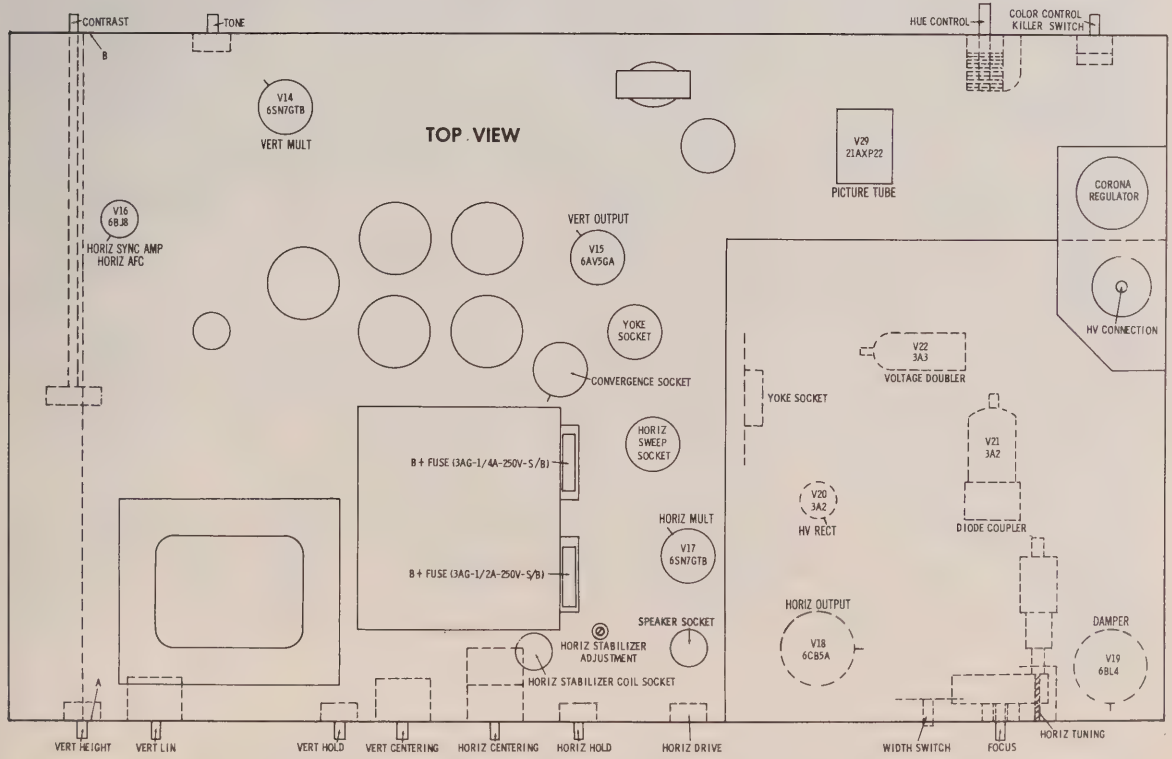
TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO


TOP VIEW
V1 6BQ7A RF AMP
V2 6AT8 MIXER OSC
CHANNEL SELECTOR
FINE TUNING
DIAL LIGHT SOCKET
3.579545MC CRYSTAL
CHROMA SYNC PHASE DET BAL
1ST VIDEO IF V3 6BZ8
CHROMA REF. OSC. CONTROL HORIZ BLANKING AMP. V25 6AN8
2ND VIDEO IF V4 6BZ6
V28 6AZ8 CHROMA REF. OSC. B-Y AMP.
V27 6AL5 CHROMA SYNC PHASE DET.
3RD VIDEO IF V5 6BZ6
V9 6U8 AGC KEYING BURST AMP.
G-Y DEMODULATOR
V28 12BH7A R-Y DEMODULATOR
V24 6CL6 2ND CHROMA AMP.
V23 6AZ8 CHROMA AMP.-COLOR KILLER
4TH VIDEO IF V6 6CB6
SOUND REJECT
DIODE - VIDEO DET (1N60)
DIODE - SOUND DET (1N60)
VIDEO OUTPUT V8 6CL6
VIDEO AMP V7 6CL6
INDICATES BLANK PIN OR LOCATING KEY
COLOR KILLER THRESHOLD
SOUND IF V10 6AU6
NOISE INV
RATIO DET AF AMP V11 6T8
AGC CLAMPER
AUDIO OUTPUT V12 6W6GT
V13 6C56 SYNC SEP
DELAY LINE
AGC
VERTICALLY MOUNTED ON HORIZONTAL CHASSIS



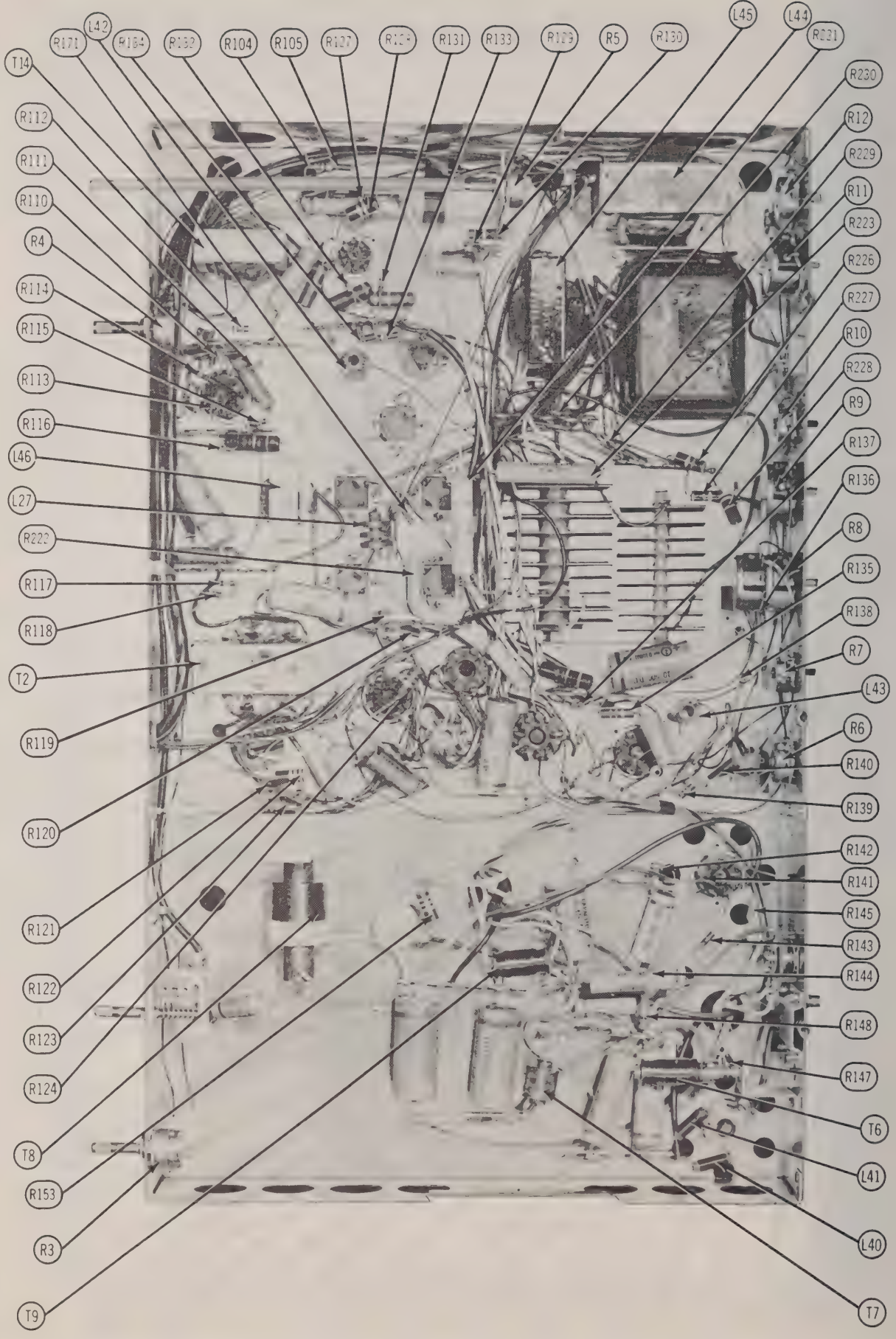




SYLVANIA MODELS 31C606, 31T304M (Ch. 1-534-1, -2)

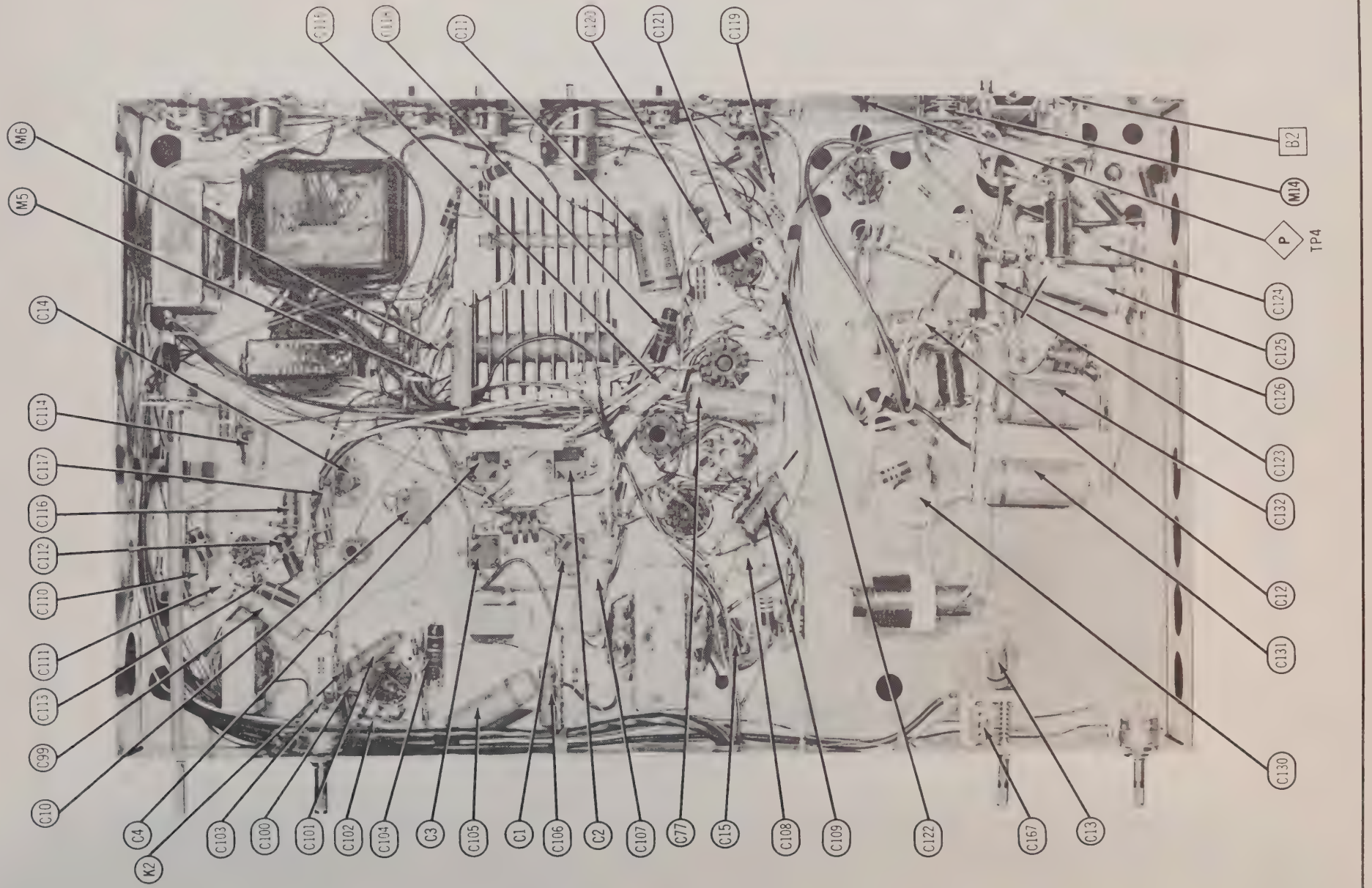
FOLDER 4

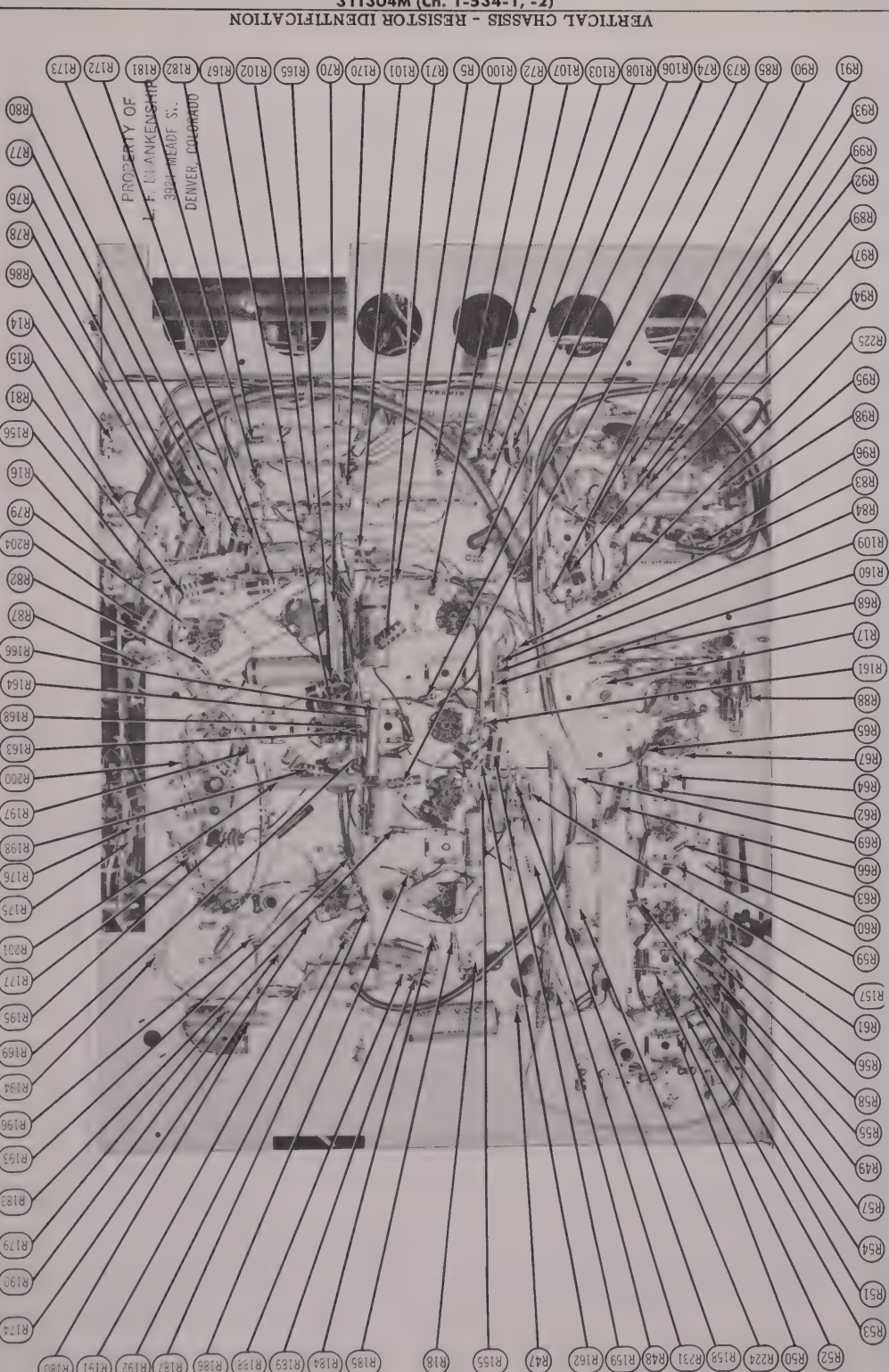
VERTICAL CHASSIS - CAPACITOR IDENTIFICATION

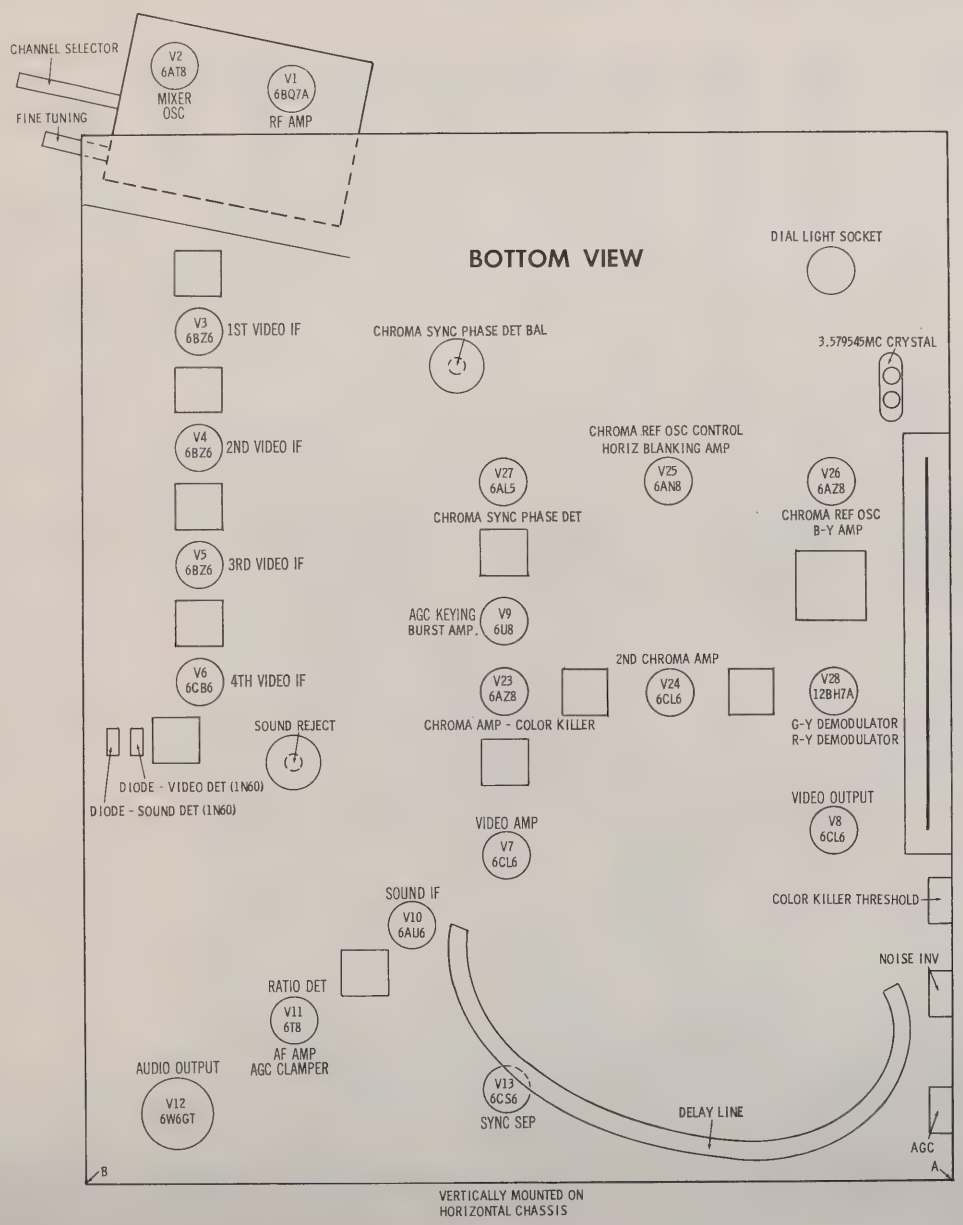


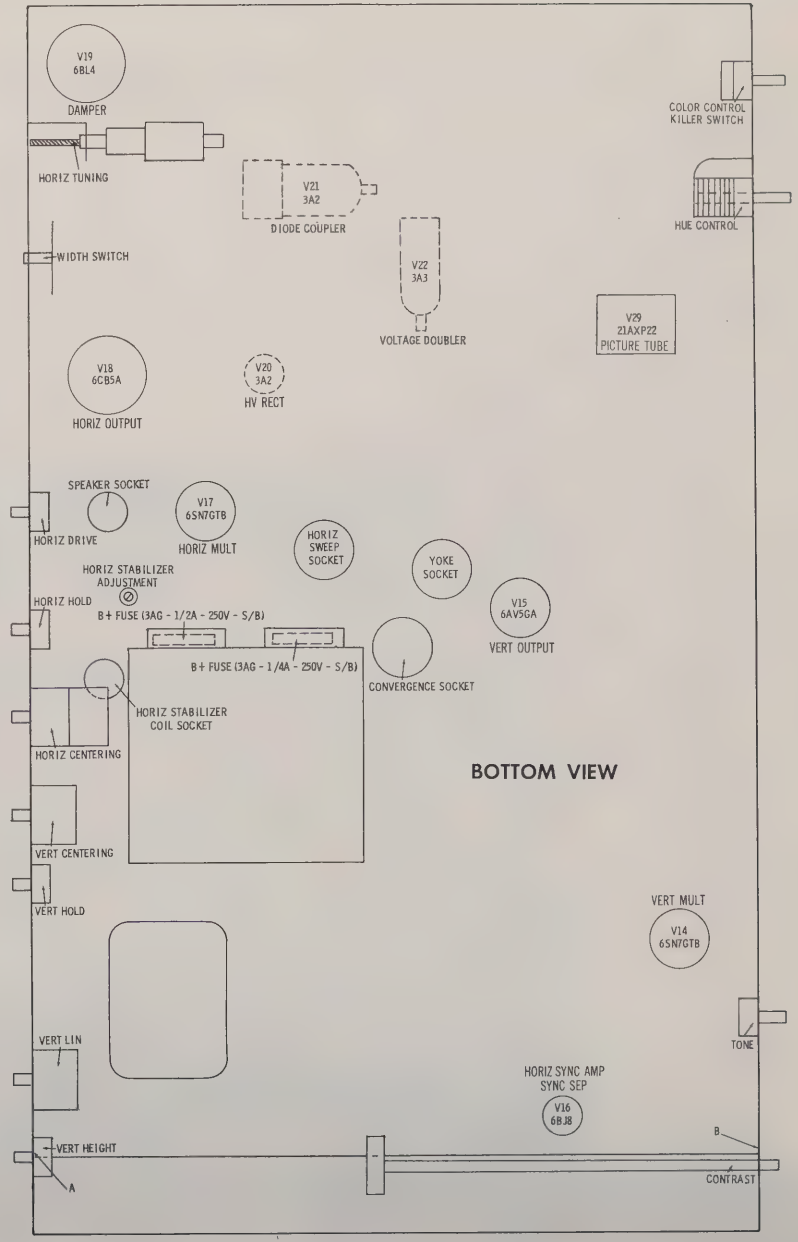
CHASSIS BOTTOM VIEW - RESISTOR, TRANS, & INDUCTOR IDENT

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

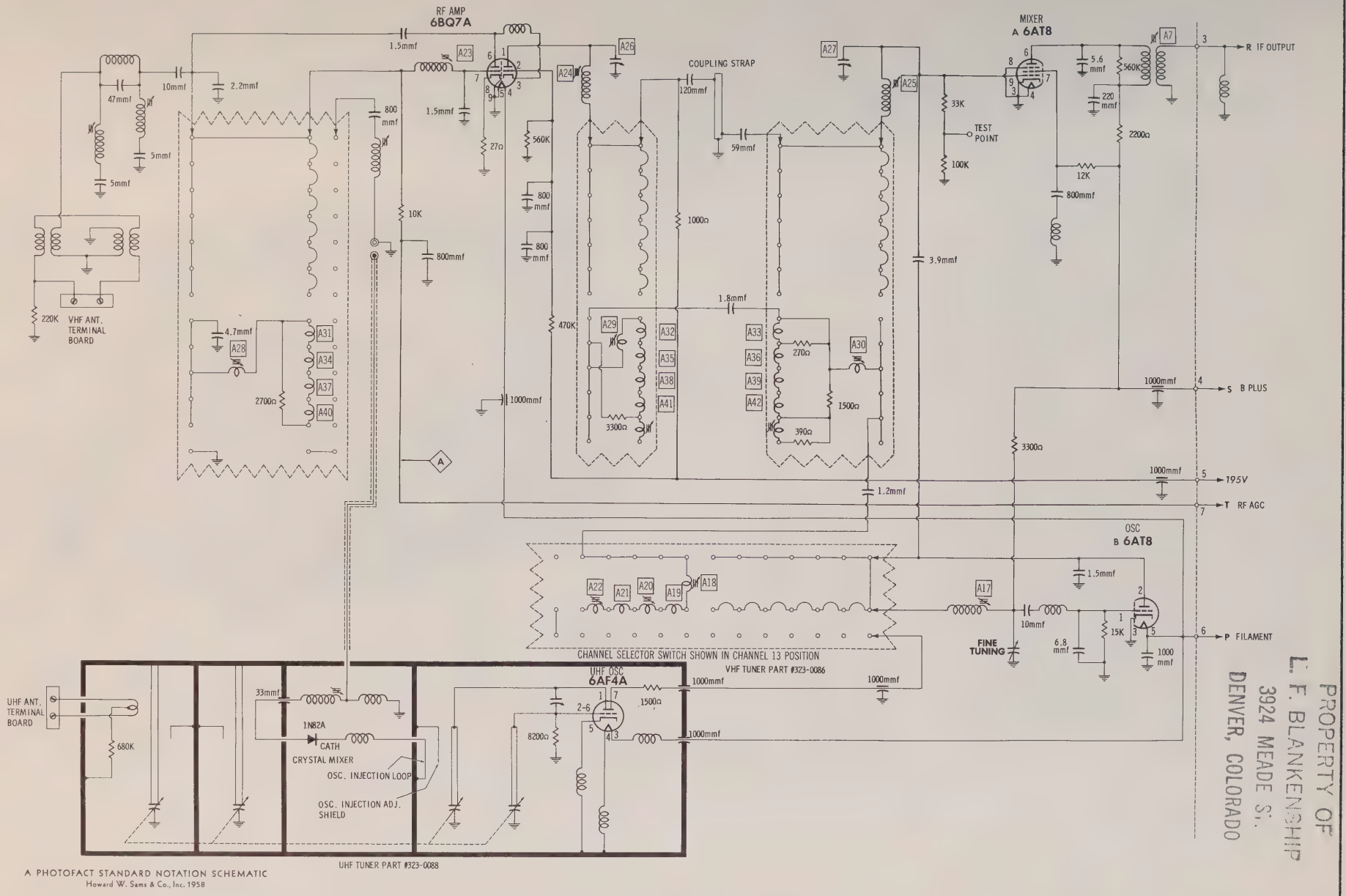



VERTICAL CHASSIS - RESISTOR IDENTIFICATION
PROPERTY OF
L. F. LIVINGSTON
3004 MEADE St.
DENVER, COLORADO
R91 R90 R85 R73 R74 R106 R108 R103 R107 R102 R100 R2 R5 R1 R101 R170 R70 R165 R102 R167 R182 R181 R172 R173
R93 R99 R92 R89 R97 R94 R225 R95 R98 R96 R83 R84 R109 R160 R68 R17 R161 R88 R65 R67 R64 R62 R69 R66 R63 R60 R59 R157 R61 R56 R58 R55 R49 R57 R54 R51 R53
R52 R50 R224 R158 R231 R48 R159 R162 R47 R155 R18 R185 R184 R129 R182 R186 R183 R192 R191 R180
R174 R190 R179 R183 R193 R196 R194 R169 R195 R177 R201 R175 R176 R198 R197 R200 R163 R168 R164 R166 R87 R82 R204 R79 R16 R156 R81 R15 R14 R86 R78 R76 R77 R80





TUBE PLACEMENT CHART

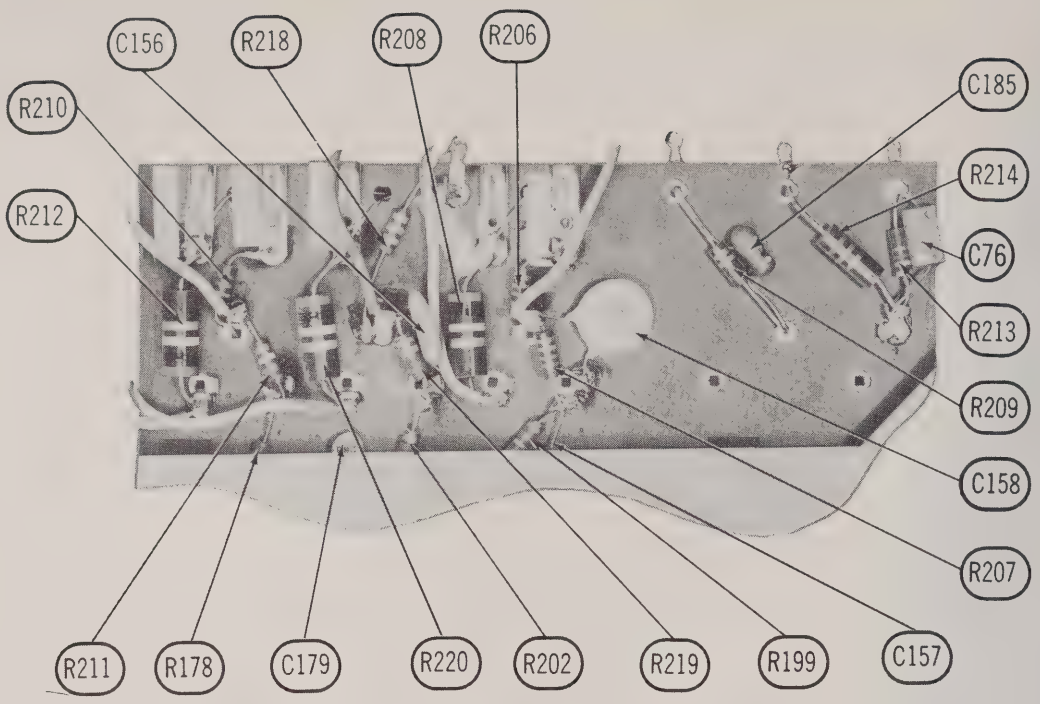


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

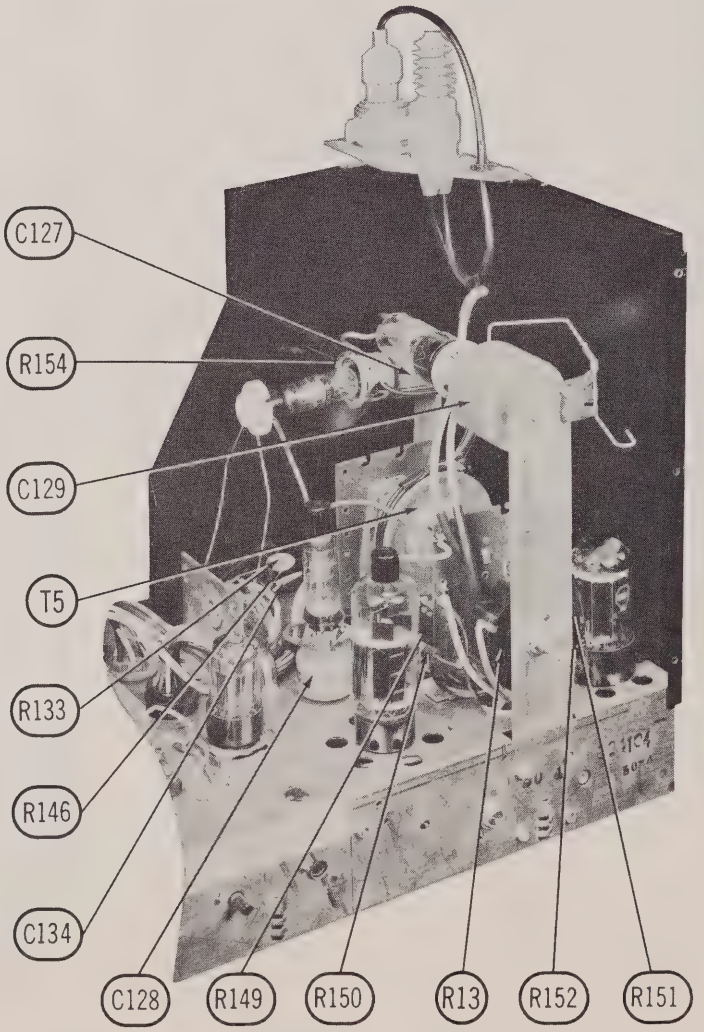
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALTERNATE TUNER SCHEMATIC

SYLVANIA MODELS 31C606, 31T30AM (Ch. 1-534-1, -2)



VIDEO TERMINAL BOARD



HV COMPARTMENT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BQ7A	
V2	Mixer-Oscillator	6AT8	
V3	1st. Video IF Amp.	6BZ6	
V4	2nd. Video IF Amp.	6BZ6	
V5	3rd. Video IF Amp.	6BZ6	
V6	4th. Video IF Amp.	6CB6	
V7	Video Amp.	6CL6	
V8	Video Output	6CL6	
V9	AGC Keying-Burst Amp.	6U8	
V10	Sound IF Amp.	6AU6	
V11	Ratio Det.-AF Amp.-AGC Clamper	6T8	
V12	Audio Output	6W6GT	
V13	Sync Sep.	6CS6	
V14	Vert. Mult.	6SN7GTB	
V15	Vert. Output	6AV5GA	
V16	Horiz. Sync Amp.-Horiz. AFC	6BJ8	
V17	Horiz. Mult.	6SN7GTB	
V18	Horiz. Output	6CB5A	
V19	Rectifier Damper	6BL4	
V20	HV Rectifier	3A2	
V21	Diode Coupler	3A2	
V22	Voltage Doubler	3A3	
V23	Chroma Amp.-Color Killer	6AZ8	
V24	2nd. Chroma Amp.	6CL6	
V25	Chroma Ref. Osc. Control-Horiz. Blanking Amp.	6AN8	
V26	Chroma Ref. Osc.-B-Y Amp.	6AZ8	
V27	Chroma Sync Phase Det.	6AL5	
V28	G-Y Demodulator-R-Y Demodulator	12BH7A	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V29	21AXP22	21AXP22A	21AXP22 21AXP22A	21AXP22 21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	250	161-1032	AFHS1-37-30	XA0318	FP126	TMS-75	S-201	TVL-1547
C2	200	300	161-1033	AFHS1-37-30	B0332	FP227.7	TMT-165	S-201	R1557 *
C3	200	300	161-1035	AFHS1-37-30	B0332	FP227.7	TMT-165	S-201	R1557 *
C4	200	300	161-1035	AFHS1-37-30	B0332	FP227.7	TMT-165	S-201	R1557 *
C5A	▲40	475	161-3026	AFH3-50-07	B0487	FP476		T-197	R2548 *
B	■10	350			BBR20-25			MT-0220	
C	▲20	25							
C6	10	25	161-1000	PRS25V10	BBR10-25	TC22	TD-10-25	MT-0210	TVA-1204
C7	4	350	161-1030	PRS350V4	BR435	TC60	TD-4-450	MT-4504	TVA-1601
C8	4	50	161-1008	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1402
C9A	■40	350	161-3025	AFH3-110-50		FP342.7		D-182	R2549 *
B	▲20	350						MT-0250	
C	50	25							
C10A	▲20	475	161-3027	AFH3-187-50		FP389.1		Q-070	R2550 *
B	■10	150				TC2505		MTH-2550	
C	▲500	25							
C11	10	500	161-1022	PRS500V10	BR1250	TC82	TD-10-500	MT-5010	TVA-1963
C12	10	475	161-1028	PRS500V10	BR1250	TC82	TD-10-500	MT-4710	TVA-1802
C13	10	25	161-1000	PRS25V10	BBR10-25	TC22	TD-10-25	MT-0210	TVA-1204
C14	500	50	161-1031	AFH1-13-05	BR5005				R2560 *
C15	500	6NP	161-1034	NP-PRS6V	BR1000-6 †	TC610 †	TD-1000-6 †	MTH-06100 †	R1324 *
				500	BR1000-6 †	TC610 †	TD-1000-6 †	MTH-06100 †	
C16	4	350	161-1030	PRS350V4	BR435	TC60	TD-4-450	MT-4504	TVA-1601
C17	30	10NP	161-1040	NP-PRS10V25	BR6015	TC1025		MT-0250	R2553 *
					BR6015 †			MT-0250 †	

† Connect negative leads together.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C18	5			NPO-SI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V47	
C19	5			NPO-SI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V47	
C20	47			NPO-SI 47	TCZ-47	C10Q47C	TCO-47	ZT-5447	5TCC-Q47	
C21	10			NPO-SI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	
C22	2.2			NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	
C23	4.7			NPO-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C24	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C25	2.2			NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	①
C26	1.5			NPO-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C27	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C28	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C29										
C30	1000			EF-001	MFT-1000				503C-D1	
C31	1000			EF-001	MFT-1000				503C-D1	
C32	120			BPD-00012	DD-121	L10T12	ED-120	UC-5312	5GA-T12	
C33	1.8			NPO-SI 1.5	TCZ-1R5	C10V15C				
C34	1.2			NPO-SI 1.0	TCZ-1	C10V15C	TCO-1.0			
C35	59									
C36										
C37	3.9									
C38	800			BPD-0008	DD-801	L10T8	ED-0008			
C39	5.6									
C40	220									N1400 3%
C41	1000			EF-001	MFT-1000				503C-D1	
C42	10			NPO-SI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	
C43	6.8			NPO-SI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	
C44	1.5									N1500 10%
C45	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C46	4700		166-4700D	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C47	4700		166-4700D	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C48	.1	200	160-0601	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C49	25-280		172-0039							
C50	22		166-0022N							N075
C51	22		166-0022N							N075
C52	680		166-0680	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	REPLACEMENT DATA ERIE PART No.	MALLORY PART No.	SPRAGE PART No.	NOTES
C53	1000		168-00002	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C54	1000		168-00002	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C55	.047	200	160-00547	P288N-047	DF-502	CUB2347	GEM-4147	ET2M-S47		
C56	4700		160-04702	BP01-0047	DD-473	BYA501	ED-1000	DCS2E	5HK-51	
C57	4700		168-04700	BP01-0047	DD-472	BYA501	ED-1000	DCS2E	5HK-51	
C58	.47	200	160-00647	P288N-47		CUB2347	GEM-4147	ET2M-S47		
C59	4700		168-04700	BP01-0047	DD-473	BYA501	ED-1000	DCS2E	5HK-51	
C60	4000		168-03000	BP01-001	DD-103	BYA501	ED-1000	DCS2E	5HK-51	
C61	680		168-00680	BP01-00068	DD-681	BYA10T68	ED-680	UC-5368	SGA-T68	
C62	4700		168-04700	BP01-0047	DD-472	BYA501	ED-1000	DCS2E	5HK-51	
C63	4700		168-04700	BP01-0047	DD-472	BYA501	ED-1000	DCS2E	5HK-51	
C64	1000		168-03000	BP01-001	DD-103	BYA501	ED-1000	DCS2E	5HK-51	
C65	680		168-00680	BP01-00068	DD-681	BYA10T68	ED-680	UC-5368	SGA-T68	
C66	4700		168-04700	S1-370		DL-370	LYF37	GP-370	UC-5237	BGA-T37
C67	4700		168-04700	BP01-0047	DD-472	BYA501	ED-1000	DCS2E	5HK-51	
C68	680		168-00680	BP01-00068	DD-681	BYA10T68	ED-680	UC-5368	SGA-T68	
C69	47		166-00479	S1-370		DL-370	LYF37	GP-370	UC-5237	BGA-T37
C70	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C71	10		168-00100	NPO-001	TCN-10	CTA4Q1U	TCT-10	NT-5H	BTCU-Q5	NPO 5%
C72	22		166-00227	NPO-S1 22		TCE-22	LOQ22	ED-33		MS-433	10%
C73	4700		168-04700	BP01-0047	DD-473	BYA501	ED-1000	DCS2E	5HK-51	
C74	1	200	160-00501	P288N-1	DF-104	CUB2P1	GEM-4147	ET2M-P1		
C75	201	200	160-00201	P288N-001	DD-104	CUB4P1	GP-1000	GEM-421	6TM-D1	
C76	30		168-00300	P468N-0001	DD-301	BYA501	ED-1000	DCS2E	5HK-51	
C77	47		166-00479	P288N-47		CUB2P47	GEM-4147	ET2M-P47		
C78	022	600	160-05122	P488N-022	DD-203	CUB4S22	ED-03	GEM-4123	4TM-S22	
C79	47		166-00479	S1-47		DL-470	LYF47	GP-470	UC-5247	BGA-T47
C80	1.5		168-00152	NPO-S1 1.5		TCE-1R5	CTA8V15C	TCO-1 5	ZT-5S15	STCCB-V15	NPO 5
C81	10		168-00100	S1-10		TCN-10	LT4Q1U	TCT-10	NT-5H	BTCU-Q5	NPO 5%
C82	4.7		168-00479	NPO-S1 4.7		TCE-4R7	LOV47C	TCO-4 7	ZT-5S47	STCCB-V47	NPO 5%
C83	2200		166-02202				LRS032			MS-222	10%
C84	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C85	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C86	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C87	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C88	1	200	160-00501	P288N-1	DF-104	CUB2P1	GEM-4147	ET2M-P1		
C89	1	200	160-00501	P288N-1	DF-104	CUB2P1	GEM-4147	ET2M-P1		
C90	.033	200	160-00333	P288N-022	DD-203	CUB4S22	ED-03	GEM-4122	4TM-S22	
C91	.0047	600	160-00547	P488N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C92	100		168-00100	1468-0001	DE-101	SWS71	ED-100	UC-531	1FM-31	
C93	.047	600	160-00547	P468N-047	DF-503	CUB5D47		GEM-5147	5TM-D47	
C94	.0047	600	160-00349	P468N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C95	01		160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C96	220		160-00227	1468-00022	DE-221	SRS72	ED-220	GEM-5122	5TM-D22	
C97	3300		166-03302	BP01-0033	DD-332	BYA10D33	ED-0033	UC-5233	5JA-D33	
C98	1	200	160-00501	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C99	47	200	160-00647	P288N-47		CUB2P47		GEM-2047	2TM-P47	
C100	1	200	160-00501	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C101	1000		168-03000	BP01-001	DD-102	BYA501	ED-1000	DCS2E	5HK-51	
C102	.0047	600	160-00547	P468N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C103	.012	600	160-00512	P468N-0022	DD-203	CUB4S22	ED-03	GEM-4122	4TM-S22	
C104			166-00120	S1-20		DL-200	LYF20	GP-200	UC-5220	BGA-T20	3
C105	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C106	22	600	160-00322	P468N-1		CUB5P22		GEM-5122	5TM-P22	
C107	.0047	600	160-00347	P468N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C108	22	600	160-00322	P468N-22		CUB5P22		GEM-5022	5TM-P22	
C109	3000			BYD-33-3000	DD30-103	BYA10D33	HD3-1000	UC-5233	5JA-D33	
C110	015	600	160-06115	P468N-015	DD15-153	CUB5D15	ED-015	GEM-5115	5TM-S15	
C111	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C112	10000		168-03000	BP01-001	DD-103	BYA501	ED-1000	DCS2E	5HK-51	
C113	001	600	160-00521					GEM-1521		10%
C114	001	600	160-00521					GEM-1521		10%
C115	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C116	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C117	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C118	001	600	160-00521					GEM-1521		10%
C119	001	600	160-00521					GEM-1521		10%
C120	470		163-04705	1464-00047	DE-471	5WS74T	ED-470	UC-5347	MS-347	10%
C121	0047	600	160-00468	P468N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C122	470		163-04705	1464-00047	DE-471	5WS74T	ED-470	UC-5347	1FM-347	
C123	01	600	160-00521	P568N-01	DD-103	CUB5E1	GP-1000	GEM-511	5TM-S1	
C124	1	600	160-00510	P568N-1	DF-104	CUB5P1		GEM-5101	5TM-P1	
C125	22	600	160-00444	P568N-22		CUB5P22		GEM-5022	5TM-P22	
C126	22	600	160-00444	P568N-22		CUB5P22		GEM-5022	5TM-P22	
C127	047	600	160-00547	P568N-047	DF-503	CUB5D47		GEM-5147	5TM-D47	
C128	2200	15000	160-00442							
C129	1000	15000	160-00442							
C130	2200	30000	160-00442							
C131	500	12500	160-00453	UV-502		TV-20	MMU2007S	413-1	HV20035A	20DK-T5
C132	22	1000	160-00322	P108N-22			CUB10P22		GEM-1022	10TM-P22
C133	22	1000	160-00453	P108N-22			CUB10P22		GEM-1022	10TM-P22
C134	360	3000	160-03361							
C135	360	3000	160-03361							
C136	150	3500								
C137	047	200	160-00147	P288N-047	DF-503	CUB2S47		GEM-4147	ET2M-S47	
C138	330		163-03301	1469-00032	DE-331	22RS72	ED-220		MS-322	10%
C139	10000		168-03200	BP0-AD	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C140	01	600	160-00147	P468N-01	DE-103	CUB5E1	GP-10000	GEM-511	4TM-S1	
C141	01	600	160-00147	P468N-01	DE-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C142	01	600	160-00147	P468N-01	DE-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C143	1000		163-10001	1464-001		1R5DI	ED-1000	MC235		MS-3I	10%
C144	82		166-00829		TCN-82	CTA8Q82U	TCT-82				N750
C145	22	600	160-00322	P488N-22		CUB4P22		GEM-4022	4TM-P22	
C146	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C147	2200		168-03022	BP0-02	DD-203	BYA502	ED-02		5HK-52	
C147	680		160-00681	P568N-01	DE-104	CUB6P1		GEM-601	6TM-P1	
C148	39		166-00391			N750-S1 39	TCN-39	CTA6Q39U	TCT-39		N750
C149	27		168-00270								Y330
C150	18		166-00182	S1-18		DL-180	LT8Q18	GP-18	UC-5418	SGA-Q18	
C151	0047	200	160-00247	P288N-0047	DE-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C152	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C153	10		168-00181	S1-10		DL-100	LT6Q1	GP-10	UC-541	SGA-Q1	
C154	330		163-03301	1464-00032			22RS72	ED-220		MS-322	10%
C155	18		166-00182	S1-18		DL-180	LT8Q18	GP-18	UC-5418	SGA-Q18	
C156	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C157	10000		168-03020	BP0-01	DD-103						
C158	3		166-00239	S1-3		DL-30	LT3Q3	GP-3	UC-5403	SGA-Q3	
C159	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C160	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C161	2		166-00182							
C162	10000		168-03020	BP0-01	DD-103	BYA501	ED-01	DCS1I	5HK-51	
C163	0022	600	160-00322	P488N-0022	DE-222	CUB4D22	GP-2200	GEM-4222	4TM-D22	
C164	0022	600	160-00322	P488N-0022	DE-222	CUB4D22	GP-2200	GEM-4222	4TM-D22	
C165	39		166-00391			N750-S1 39	TCN-39	CTA8Q39U	TCT-39		N750
C166	4700	1000	169-00057			BYD-15-4700	DD30-472	BYA10D47	HD15-4700		SGA-D47
C167	4000	1000	169-00057			BYD-15-4700	DD30-472	BYA10D47	HD15-4700		SGA-D47
C168	4700	1000	169-00057			BYD-15-4700	DD30-472	BYA10D47	HD15-4700		SGA-D47

Some versions use a 1 5mmf in this application.
Chassis coded 00, 01, 02, 03 use 4.7mmf (Part #169-0030) in this application.
Not used in chassis coded 00, 01, 02, 03.
Chassis coded 00, 01, 02, 03 use .1mfd @ 1000V (Part #169-0035) in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	SYLVANIA PART No.	REPLACEMENT DATA CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	153-0102	BT-54		Q18-130X	UT-430	Volume - Tap ② 50K
B	Shaft			Not Req.		Not Req.	Not Req.	
R2A	2500Ω	½	153-0113	B-7	A47-2500-S	Q1-U5	U8	Brightness - Note 1
B	Shaft			Not Req.	K26-3	Not Req.	Not Req.	
R3A	3000Ω	½	153-0037	B-6	A47-3000-S	Q1-U10	U8	Color
B	Shaft			Not Req.	K26-3	Not Req.	Not Req.	
C	Switch			K2-1	SWE-15	T6-1	U9-36	Color Killer
R4A	1.5meg	½	152-0101	B-78	A47-1meg-Z	Q13-139	U9	Tone
B	Shaft			Not Req.	K26-3	Not Req.	Not Req.	
R5A	3000Ω	½	153-0096	B-6	A47-3000-S	Q1-U10	U8	Contrast
B	Shaft			Not Req.	K26-3	Not Req.	Not Req.	
R6A	3000Ω	½	153-0096	B2E-10	A47-3000-S	B11-134	TA35L	Horiz. Drive
B	Shaft			Not Req.	F32-1/4	TM1-K1t	Not Req.	
R7A	100K	½	153-0114	B2K-40	A47-100K-S	B11-138	TA35L	Horiz. Hold- Note 2
B	Shaft			Not Req.	F32-1/4	TM3-K1t	Not Req.	
R8A	100Ω	2(WW)	153-3020			WP6100	UB94W	Horiz. Centering
B	100Ω	2(WW)				WM100	Not Req.	Horiz. Centering
C	Shaft			K2-1	SWP-15	T6-1	U9-36	
R9A	1500Ω	2(WW)	153-3032	WW-183	A43-1500	WP81500	R1500L	Vert. Centering
B	Shaft			Not Req.	F32-1/4	Not Req.	Not Req.	
R10A	2meg	½	152-0115	B2K-75	A47-2meg-S	B11-139	TA35L	Vert. Hold
B	Shaft			Not Req.	F32-1/4	TM3-K1t	Not Req.	
R11A	1000Ω	2(WW)	153-3031	WW-103	A43-1000	WP81000	R1000L	Vert. Lin.
B	Shaft			Not Req.	F32-1/4	Not Req.	Not Req.	
R12A	1meg	½	153-0097	B2K-69	A47-1meg-S	B11-137	TA35L	Vert. Height
B	Shaft			Not Req.	F32-1/4	TM3-K1t	Not Req.	
R13	5meg	½	153-0092					Focus
R14A	10K	½	153-0083	B-14	A47-10K-S	B11-U6	TA14L	AGC
B	Shaft			Not Req.	F32-1/4	TM1-K1t	Not Req.	
R15A	250K	½	153-0094	A2B-50	A47-250K-S	B11-130	TA35AL	Noise Gate
B	Shaft			A2K-1	F32-1/4	TM1-K1t	Not Req.	
R16A	500K	½	153-0095	B2K-59	A47-500K-S	B11-133	TA35L	Color Killer Threshold
B	Shaft			Not Req.	F32-1/4	TM1-K1t	Not Req.	
R17A	500Ω	½	153-0113	A2B-2	A47-500-S	B11-103	TA35L	Sound Reject - Note 3
B	Shaft			A2K-1	F32-1/4	TM1-K1t	Not Req.	
R18A	250K	½	153-0094	A2B-50	A47-250K-S	B11-130	TA35AL	Chroma Sync Phase Det. Bal.
B	Shaft			A2K-1	F32-1/4	TM1-K1t	Not Req.	
R19A	500K	½	153-0104	B-59	A47-500K-S	B11-135	TA35L	Green Background
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R20A	500K	½	153-0104	B-59	A47-500K-S	B11-135	TA35L	Blue Background
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R21A	1meg	½	153-0105	B-69	A47-1meg-S	B11-137	TA35L	Red Screen
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R22A	1meg	½	153-0105	B-69	A47-1meg-S	B11-137	TA35L	Green Screen
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R23A	1meg	½	153-0105	B-69	A47-1meg-S	B11-137	TA35L	Blue Screen
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R24A	1500Ω	½	153-0103	B-8	A47-1500-S	B11-109	TA35ZL	Red Horiz. Amplitude
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R25A	1500Ω	½	153-0103	B-8	A47-1500-S	B11-109	TA35ZL	Green Horiz. Amplitude
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R26A	1500Ω	½	153-0103	B-8	A47-1500-S	B11-109	TA35ZL	Blue Horiz. Amplitude
B	Shaft			Not Req.	K26-3	TM3-K1t	Not Req.	
R27A	100Ω	½	154-0015				UE39	Red Vert. Tilt
B	100Ω						Not Req.	Red Vert. Amplitude
R28A	100Ω	½	154-0015				UE39	Green Vert. Tilt
B	100Ω						Not Req.	Green Vert. Amplitude
R29A	100Ω	½	154-0015				UE39	Blue Vert. Tilt
B	100Ω						Not Req.	Blue Vert. Amplitude

Note 1. Chassis coded 00, 01, 02, 03 use a 300Ω (Part #153-3032) in this application.
Note 2. Chassis coded 00, 01, 02, 03 use a 50K Horiz. Hold (Part#153-0098) in series with a 250K Horiz. Range (Part #153-0094) in this application.
Note 3. Not used in chassis coded 00, 01, 02 and 03.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R30	220K			
R31	10K			
R32	27Ω			Note 1
R33	47000			
R34	560K			
R35	470K			
R36	1000Ω			
R37	82000			Note 2
R38	33K			
R39	100K			

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R40	47000			Note 3
R41	22000			
R42	12K			
R43	15K			Note 2
R44	47000			
R45	2700			
R46	15000			
R47	390K 5%		1B1-03945	
R48	3.3meg 5%		1B1-03355	
R49	120K 5%		1B1-01245	
R50	47000 5%		1B1-04725	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R51	10000		1B1-0102	
R52	680Ω		1B1-0681	
R53	47Ω 5%		1B1-04705	
R54	22K 5%		1B1-02235	
R55	1000Ω		1B1-0102	
R56	15K 5%		1B1-01535	
R57	680Ω		1B1-0681	
R58	47Ω 5%		1B1-04705	
R59	33K 5%		1B1-03335	
R60	1000Ω		1B1-0102	
R61	15K 5%		1B1-01535	
R62	1500Ω		1B1-0152	
R63	47Ω 5%		1B1-04705	
R64	47000 5%		1B1-04735	Note 4
R65	470Ω		1B1-0471	
R66	18K	3	183-0183	
R67	330Ω		1B1-0331	
R68	33000Ω		1B1-0333	
R69	10000	10	187-00402	
R70	30K	5	189-0077	Note 5
R71	33K	2	183-0233	
R72	33Ω 5%		1B1-03305	
R73	10K		1B1-0103	
R74	1800Ω		1B1-0182	
R75	100Ω		1B1-0101	
R76	10K		1B1-0103	
R77	82K		1B1-0823	
R78	150K		1B1-0154	
R79	100K		1B1-0104	
R80	18K		1B1-0183	
R81	15K	2	183-0153	
R82	33K	2	183-0333	
R83	82Ω		1B1-0820	
R84	82K		1B1-0823	
R85	33K		1B1-0333	
R86	33K	1	183-0133	
R87	22K	1	183-0223	
R88	33K	1	183-0333	
R89	10K		1B1-0103	
R90	33000Ω	2	183-0322	
R91	180Ω		1B1-0181	
R92	33K		1B1-0273	Note 6
R93	15meg		1B1-0156	
R94	470K		1B1-0474	
R95	1000Ω		1B1-0102	
R96	220K		1B1-0224	
R97	33K		1B1-0333	
R98	15K	1	183-0153	
R99	180Ω	1	183-0181	
R100	470Ω		1B1-0471	
R101	33K		1B1-0333	
R102	18K		1B1-0183	
R103	100K		1B1-0104	
R104	33K		1B1-0333	
R105	3300Ω		1B1-0332	
R106	33K		1B1-0333	
R107	1.2meg		1B1-0125	
R108	330K		1B1-0334	
R109	22K		1B1-0223	
R110	10K		1B1-0103	
R111	47K		1B1-0473	
R112	1000Ω		1B1-0102	
R113	330K		1B1-0334	
R114	820K		1B1-0824	
R115	330K		1B1-0334	
R116	1800Ω		1B1-0182	
R117	100K		1B1-0104	
R118	120K		1B1-0124	
R119	1000Ω		1B1-0102	
R120	3.3meg		1B1-0335	
R121	100Ω		1B1-0101	
R122	47K	2	183-0473	
R123	18K	2	183-0183	
R124	220Ω	2	183-0221	
R125	1000Ω 5%		1B1-0102	
R126	1200Ω 5%		1B1-01225	
R127	1meg		1B1-0106	
R128	10K	2	183-0103	
R129	22K		1B1-0223	Note 7
R130	100K	1	183-0104	
R131	100K		1B1-0104	
R132	100K		1B1-0104	
R133	4.7meg		1B1-0475	
R134	4.7meg		1B1-0475	
R135	5600Ω	1	183-0562	
R136	33K		1B1-0333	Note 8
R137	820Ω		1B1-0821	
R138	47K		1B1-0473	
R139	150K		1B1-0134	
R140	22000Ω	2	183-0223	
R141	100Ω		1B1-0101	

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R142	470K		1B1-0474	
R143	100Ω		1B1-0101	
R144	12K	10	189-0068	
R145	4.7Ω 5%	1	187-0044	
R146	4700Ω		1B1-0472	
R147	10K		1B1-0103	
R148	10K	1	182-0103	
R149	470K	2	183-0068	
R150	470K	2	189-0068	
R151	4.7meg	2	189-0073	
R152	5.6K	2	189-0073	
R153	56K	2	189-0067	
R154	3.3Ω		1B1-04705	
R155	2.2meg		1B1-0225	
R156	18meg		1B1-0186	
R157	2.2meg		183-0225	
R158	330K		1B1-0334	Note 3
R159	22K	2	183-0223	
R160	33K	1	182-0333	
R161	39000 5%		1B1-03925	
R162	3900Ω	2	183-0392	
R163	56Ω		1B1-0560	
R164	22000		1B1-0223	
R165	56000	2	183-0563	
R166	39000	5	187-0016	
R167	82000	2	183-0823	
R168	150Ω		1B1-0151	
R169	150Ω		1B1-0151	
R170	27K		1B1-0273	
R171	22000		1B1-0223	
R172	39000	2	183-0392	
R173	120Ω		1B1-0121	
R174	560Ω		1B1-0561	
R175	220K 5%		1B1-02245	
R176	56K 5%		1B1-05635	
R177	15K	2	183-0153	
R178	2200Ω		183-0222	
R179	22000 5%	2	183-02225	
R180	41K 5%	5	189-0070	
R181	3300Ω		1B1-0332	
R182	2.2meg		1B1-0225	
R183	100Ω		1B1-0101	
R184	1meg 5%		1B1-01055	
R185	1meg 5%		1B1-01055	
R186	10K		1B1-0103	
R187	820Ω		1B1-0821	
R188	18K		1B1-0183	
R189	33K		1B1-0333	
R190	1000Ω		1B1-0102	
R191	47K		1B1-0473	
R192	27K 5%	1	183-02735	
R193	4700 5%		1B1-04725	
R194	68K		1B1-0683	
R195	18K	2	183-0183	
R196	68K		1B1-0683	
R197	2200Ω		1B1-0222	
R198	1meg 5%	2	183-01045	
R199	6800Ω		1B1-0682	
R200	2200Ω		1B1-0222	
R201	39K 5%	7	183-03945	
R202	6800Ω		1B1-0682	
R203	120K	2	183-0124	
R204	180K	2	183-0154	
R205	5100 5%	1	183-05125	
R206	180K		1B1-0184	
R207	180K		1B1-0184	
R208	100K	2	183-0104	
R209	18K		1B1-0183	
R210	180K		1B1-0184	
R211	330K		1B1-0334	
R212	100K	2	183-0104	
R213	33000 5%		1B1-03325	
R214	5100 5%	2	183-05115	
R215	15000 5%	2	183-01525	
R216	10000 5%	2	183-01025	
R217	270K		1B1-0274	
R218	270K		1B1-0274	
R219	180K		1B1-0184	
R220	100K	2	183-0104	
R221	4.7Ω	10	187-0044	
R222	100Ω	5	187-0049	Note 9
R223	1600Ω	10	189-0071	
R224	1000Ω	10	187-0048	
R225	470Ω	2	183-0471	
R226	100Ω	2	183-0101	
R227	100Ω	2	183-0103	
R228	33Ω	2	183-0330	
R229	10K		1B1-0103	
R230	68K		1B1-0683	
R231	4700Ω		1B1-0472	

Note 1. Some versions may use 2700Ω resistor in this application.
Note 2. Some versions may use 3300Ω resistor in this application.
Note 3. Some versions may use 560K resistor in this application.
Note 4. Some versions may use 39000 resistor in this application.
Note 5. Some versions may use two 39K resistors in parallel in this application.
Note 6. Some versions may use 18K resistor in this application.
Note 7. Some versions may use 100K resistor in this application.
Note 8. Not used in some versions.
Note 9. Some versions may use two 330Ω 2W resistors in parallel in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	UTVAC @4.1A	200V tap ② 180V @ 2.565A	6.3V @3A	6.3V @13.2A SEC. 4 6.3V @1.7A	141-2070					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	241-0040							
T3	Vert. Isolation Trans.	144-0003							
T4A	Yoke-Horiz. (12MH)	100-0027							
B	Vert. (118MH)								
T5	Horiz. Output	241-0039							
T6	Horiz. Tuning Coil (.4-2.1MH)	132-0013							
T7	Width Choke (.5MH)	132-0014							
T8	Horiz. Centering Isolation Choke (285MH)	133-0005							
T9	Horiz. Centering Isolation Choke (17MH)	133-0004							
T10	Green Horiz. Phase Coil	132-0015							
T11	Blue Horiz. Phase Coil	132-0015							
T12	Red Horiz. Phase Coil	132-0015							
T13	Convergence Yoke Assembly	100-0028							
	Convergence Magnet	400-0030							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T14	4500Ω	3-4Ω	143-0054	Z1402	A-3019	AU-604	A-8092	26S49	S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	539-0577 ①	52A21	① Used in Model 31T304M
	4"	PM		539-0405 ②		② Used in Model 31C606
	8"	PM		539-0806 ②		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	RF Choke	118-0029				1.2 Microhenries
L2	39.75MC Trap	118-0025				
L3	47.25MC Trap	118-0026				
L4	1st. Video IF	120-0017	17-5002	TV-127	6232	Includes 41.25MC Trap
L5	Fil. Choke	147-0014	19-3001	TV-189	6175	.7 Microhenry
L6	2nd. Video IF	119-0012	17-5002	TV-127	6232	Includes 41.25MC Trap
L7	Fil. Choke	147-0014	19-3001	TV-189	6175	.7 Microhenry
L8	3rd. Video IF	119-0013	17-5004	TV-126	6234	
L9	Fil. Choke	147-0014	19-3001	TV-189	6175	.7 Microhenry
L10	4th. Video IF	119-0014	17-5004	TV-126	6234	
L11	5th. Video IF	120-0020				Includes 41.25MC Trap-Note 1
L12	Series Peaking Coil	146-0012	19-4060	TV-193	6110	64 Microhenries
L13	Series Peaking Coil	131-2014	19-3180	TV-184	6180	180 Microhenries
L14	Resonant Choke	131-2012				12 Microhenries
L15	Resonant Choke	131-2012				12 Microhenries
L16	Chroma Take-off Trans.	120-0014				Includes 4.5 MC Trap & Caps.
L17	Series Peaking Coil	131-2015	19-3250	TV-185	6181	250 Microhenries
L18	Shunt Peaking Coil	131-2013	19-3125	TV-195	6153	120 Microhenries
L19	Series Peaking Coil	131-2014	19-3180	TV-184	6180	180 Microhenries
L20	Series Peaking Coil	131-2030	19-3300	TV-199	6155	300 Microhenries
L21	Resonant Choke	131-2012				12 Microhenries
L22	Resonant Choke	131-2012				12 Microhenries
L23	Sound IF	130-0003	20-1005		1470	
L24	Ratio Det.	128-0014	17-3497	TV-115	6205	Tertiary winding -1Ω
L25	Chroma Bandpass Trans.	120-0013				
L26	Demodulation Driver Trans.	120-0012				
L27	Peaking Coil	131-2018				6.9 Millihenries
L28	Burst Amplifier Discriminator Trans.	120-0015				
L29	Resonant Choke	118-0010				10.8 Microhenries
L30	Reactance Tube Plate Coil	134-0002	17-6011			
L31	Resonant Choke	118-0010				10.8 Microhenries
L32	Chroma Det. Load Coil	129-0008				
L33	Chroma Ref. Osc. Plate Trans.	120-0016	17-6014			
L34	RF Choke	118-0020	19-2864	BC-566	4612	10.8 Microhenries
L35	Series Peaking Coil	118-0027				1.7 Millihenries
L36	Series Peaking Coil	118-0028	19-3250	TV-185	6181	250 Microhenries
L37	RF Choke	118-0020	19-2864	BC-566	4612	10.8 Microhenries
L38	Series Peaking Coil	118-0027				1.7 Millihenries
L39	Shunt Peaking Coil	131-2015	19-3250	TV-185	6181	250 Microhenries
L40	RF Choke				4611	8.2 Microhenries
L41	RF Choke				4611	8.2 Microhenries

Note 1. Alternate part #119-0015 used in chassis coded 00, 01, 02 and 03.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L42	30Ω	30Ω	243-0001						Horiz. AFC
L43	37Ω		132-0001	19-1576 *	TV-163 *	6210 *	H-102 *	HS-5	Horiz. Stab. (13-33 Millihenries) * Enlarge mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L44	.425A	28Ω	1.2 Hy.	145-0022					C-40X ①
L45	.160A	27Ω	1.1 Hy.	145-0023	C5026	C-2974	C-2304	26C43	C-23X

① Drill new mounting hole.

CONVERGENCE CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L46	0A	10Ω	325 Millihenries	144-0004					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA	
K1	De-Emphasis	1000mmf, 10000mmf, 4000mmf, 22K	190-0022	Centralab Sprague	PC-186 PB-3
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω, 8200Ω	190-0007	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-100 115TM1 1405-01 V-1

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SYLVANIA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.580A	517-0013 ①				759 ①	① Selenium type
M2	.425A	517-0014 ①				759 ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	1/2A 250V S/B	191-0016		313.500 (3AG 1/2A-250V S/B)	357001	MDL 1/2	4405
M4	3AG	1/4A 250V S/B	191-0014		313.250 (3AG 1/4A-250V S/B)	357001	MDL 1/4	4405
M5	1 1/2" of #26 Wire							
M6	1 1/2" of #26 Wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	
M7	1N60	1N60	1N60	1N60	Sound Detector (Pigtail)
M8	1N60	1N60	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M9	Crystal	917-0002	3.579545MC
M10	Dial Lamp	611-0012	
M11	Tuner	323-0083	VHF (54-94925-3) Used in VHF Models coded 04 and higher
	Tuner	323-0080	VHF (54-94925-1) Used in VHF Models coded 00, 01, 02, 03
	Tuner	323-0086	VHF (UHF Models)
	Tuner	323-0088	UHF
M12	Delay Line	129-0007	
M13	Switch	571-0015	On-off
M14	Switch	573-0017	Width Control, rotary wafer type - Models coded 04 and higher
	Switch	573-0015	Width Control, Models coded 00, 01, 02, 03
M15	Magnet	400-0028	Purity
M16	Magnet	400-0029	Blue Lateral
M17	Magnet		Field Equalizing (6 used)
M18	HV Regulator	624-0004	

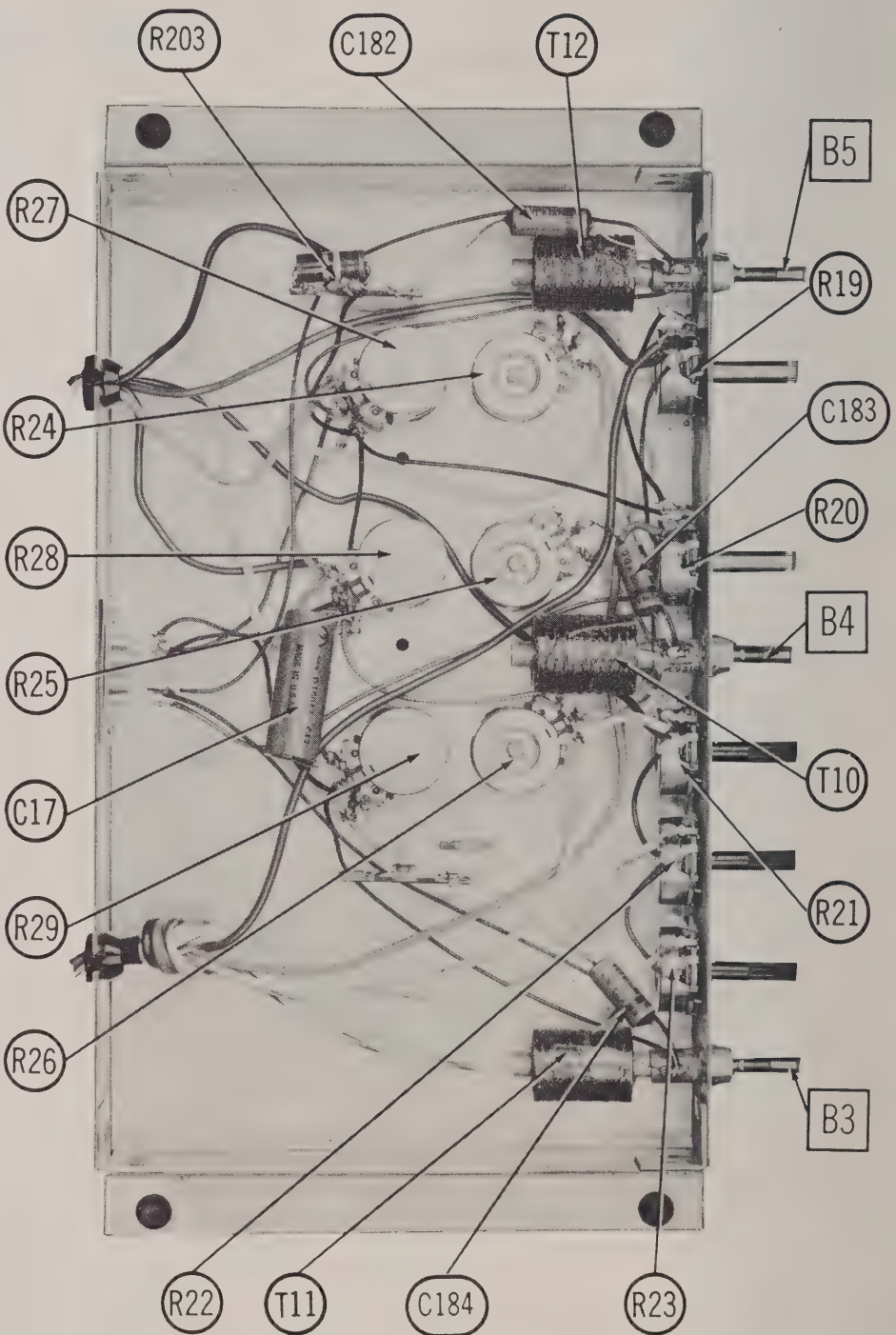
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

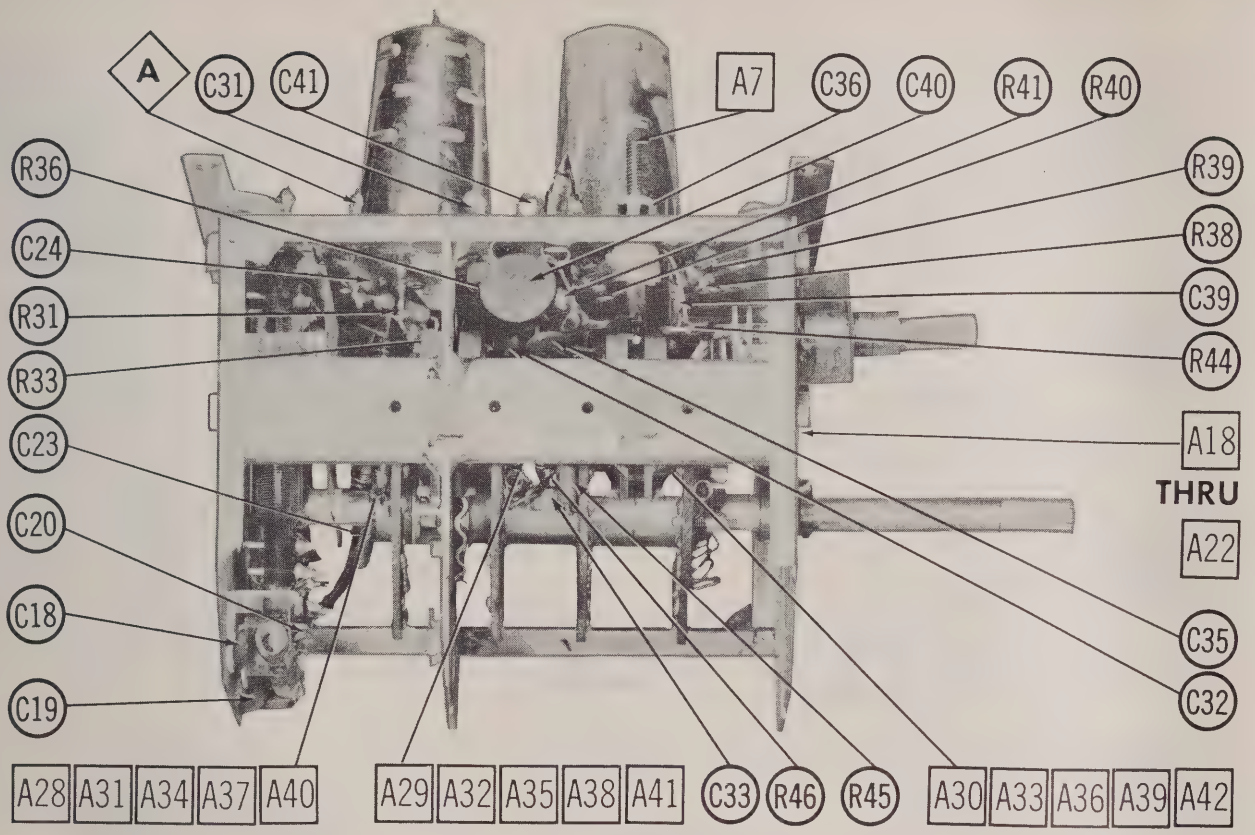
NAME	PART NO.	DESCRIPTION
Safety Glass	710-0032	

WIRING DATA

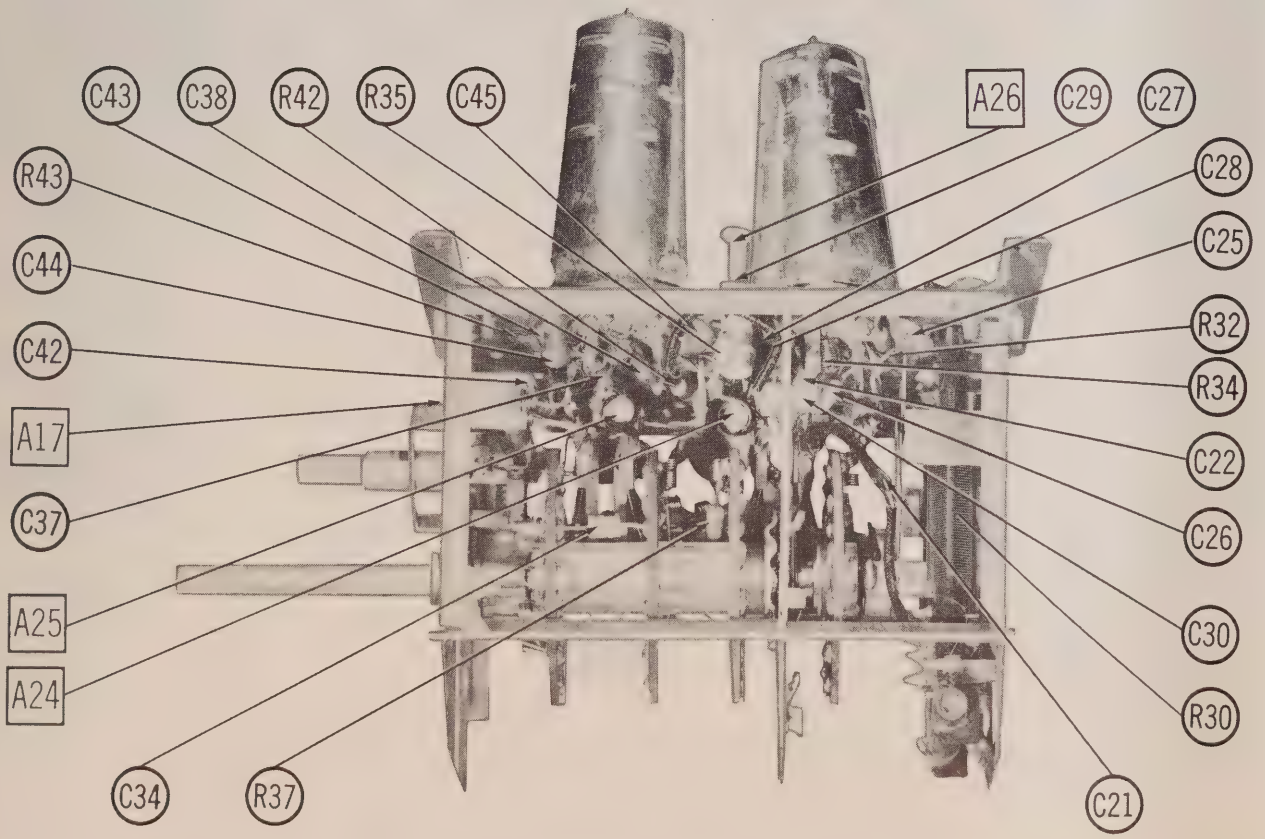
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CONVERGENCE CHASSIS

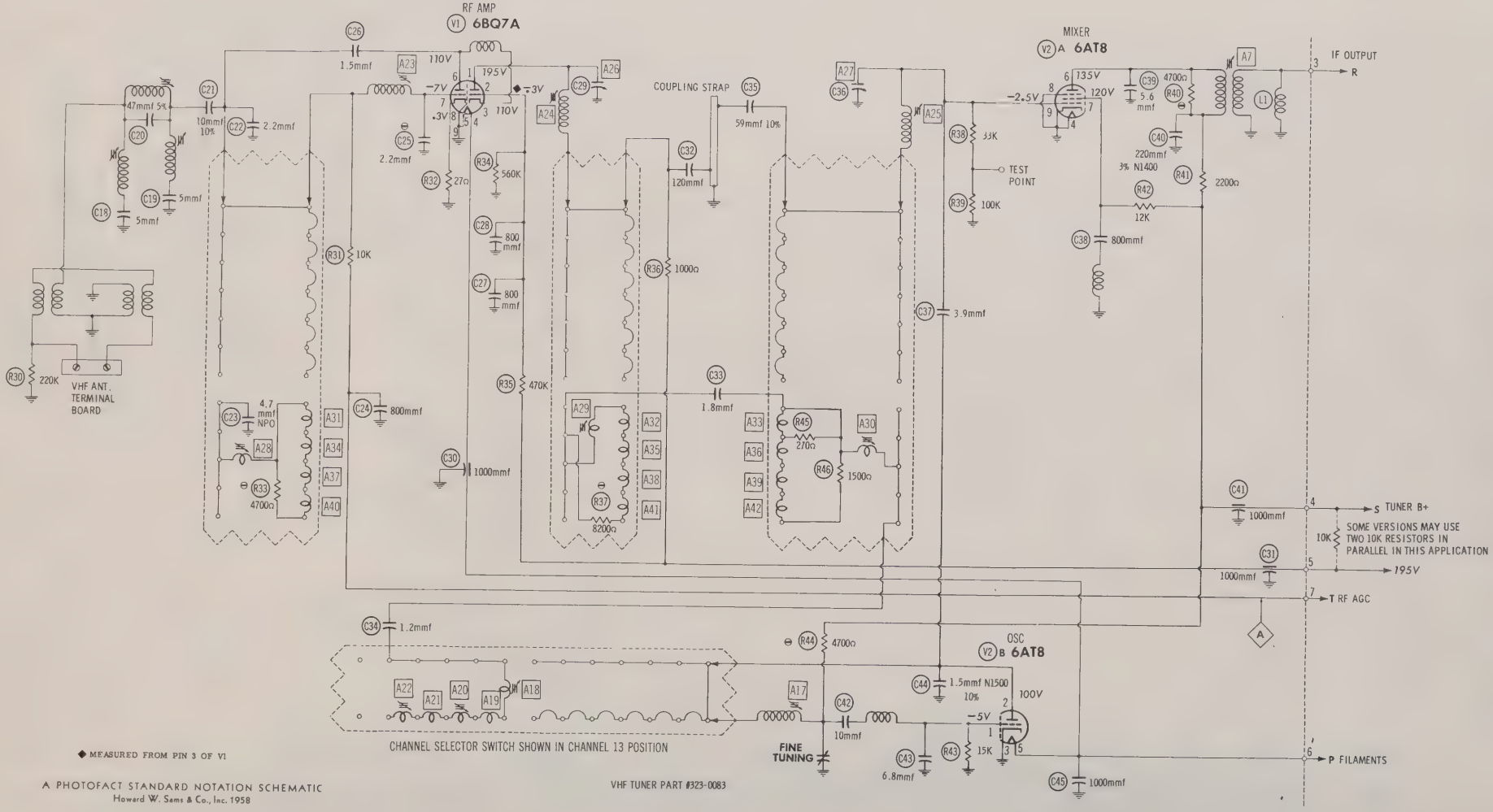


RF TUNER-LEFT SIDE

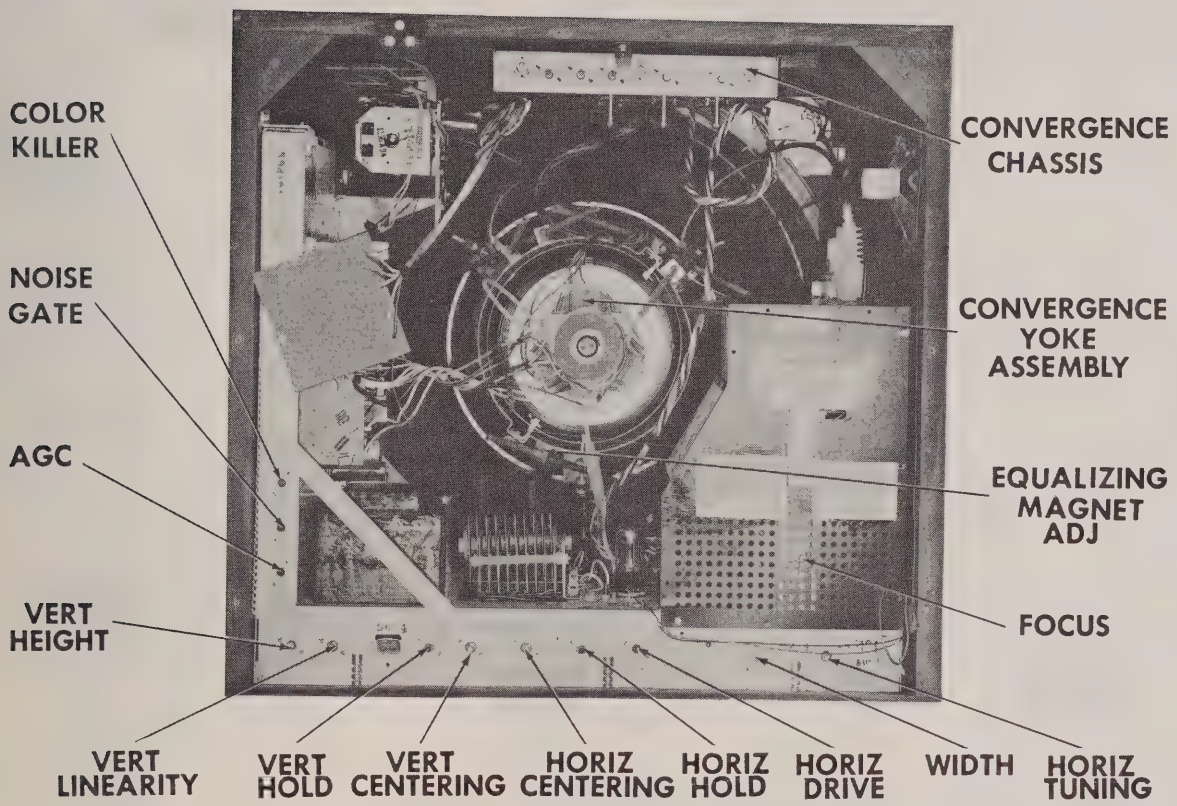


RF TUNER-RIGHT SIDE

FOLDER 4



TUNER SCHEMATIC



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 1 set screw holding each of the front knobs and remove the 2 knobs.

2. Remove 2 wood screws and a ground clip holding the escutcheon. Remove the escutcheon and 3 push-on type knobs.

3. Remove 7 wood screws holding the rear cover. Remove the rear cover. NOTE: This allows switch to operate and short the high voltage to chassis.

4. Remove 3 screws holding the front control panel.

5. Remove the picture tube socket, HV lead, yoke plug, convergence yoke plug, convergence chassis plug, dial light plug and speaker leads.

6. Remove 1 wood screw holding the convergence chassis retainer and remove the convergence chassis.

7. Remove 1 wood screw holding the antenna terminal board.

8. Remove UHF tuning and dial knobs if set is so equipped.

9. Loosen 2 metal screws holding the tuner to the vertical chassis and slide the tuner toward the back to disengage the tuner shafts.

10. Remove 1 wood screw holding the top chassis brace.

11. Remove 3 chassis bolts from the bottom.

12. Remove the chassis.

PICTURE TUBE REMOVAL

1. Remove the chassis as outlined in "Chassis removal".

2. Remove the blue lateral magnet, purity magnet and convergence yoke.

3. Lay cabinet face down on a pad.

4. Loosen and remove the 3 yoke assembly support rods. Remove the yoke assembly.

5. Remove the cone insulator from the picture tube.

6. Remove the picture tube.

7. Remove 1 screw holding the equalizer magnet assembly.

8. Remove the equalizer magnet assembly insulator and picture tube insulator.

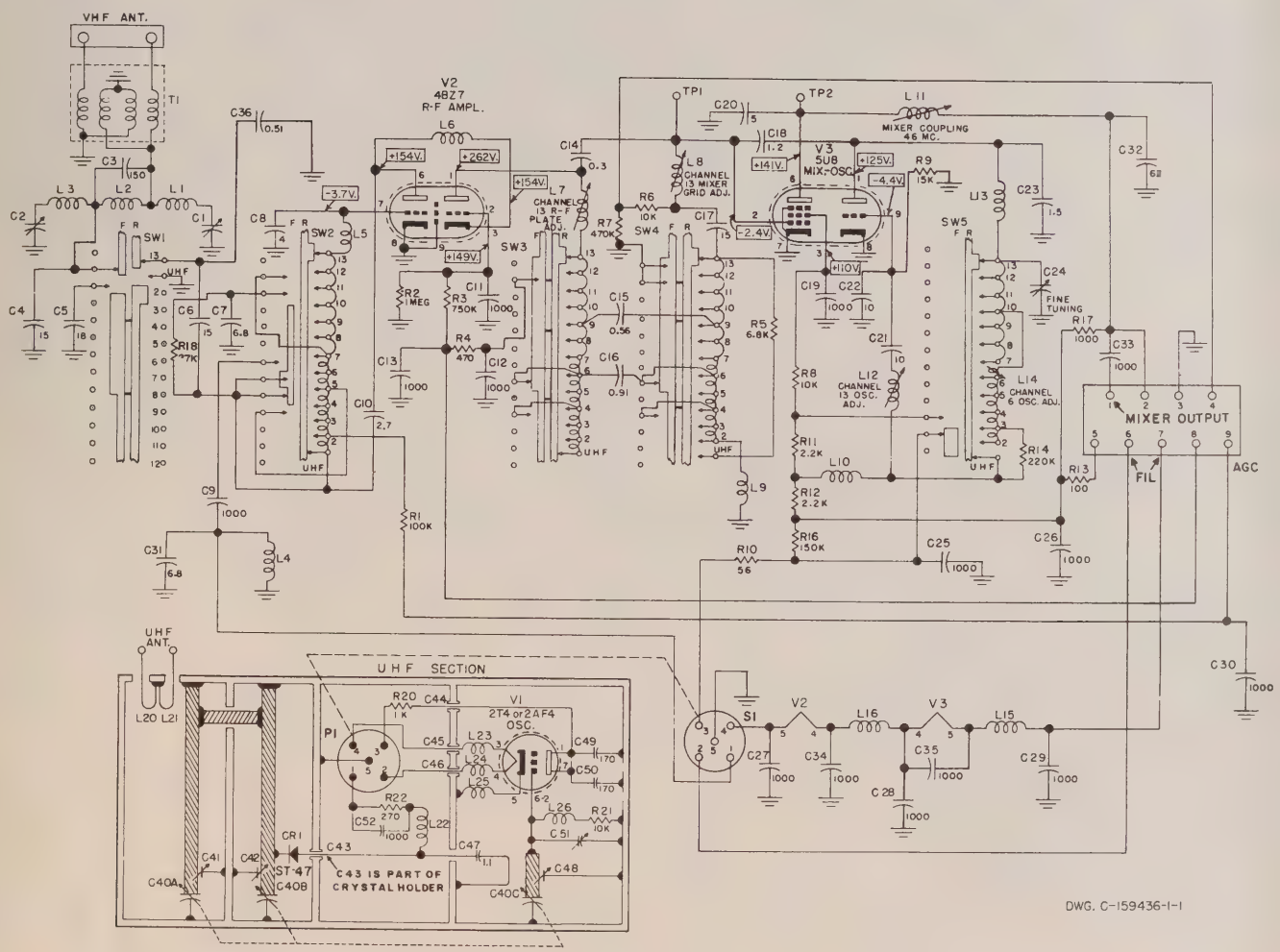
The PHOTOFACT Servicer

SET 391 ★ Published for all users of Howard W. Sams' Photofact Folders ★ MARCH 1, 1958

CROSLEY CHASSIS 468 and 469

UHF-VHF CASCODE TUNER SCHEMATIC

(Used on Chassis 469 only)



NOTES:

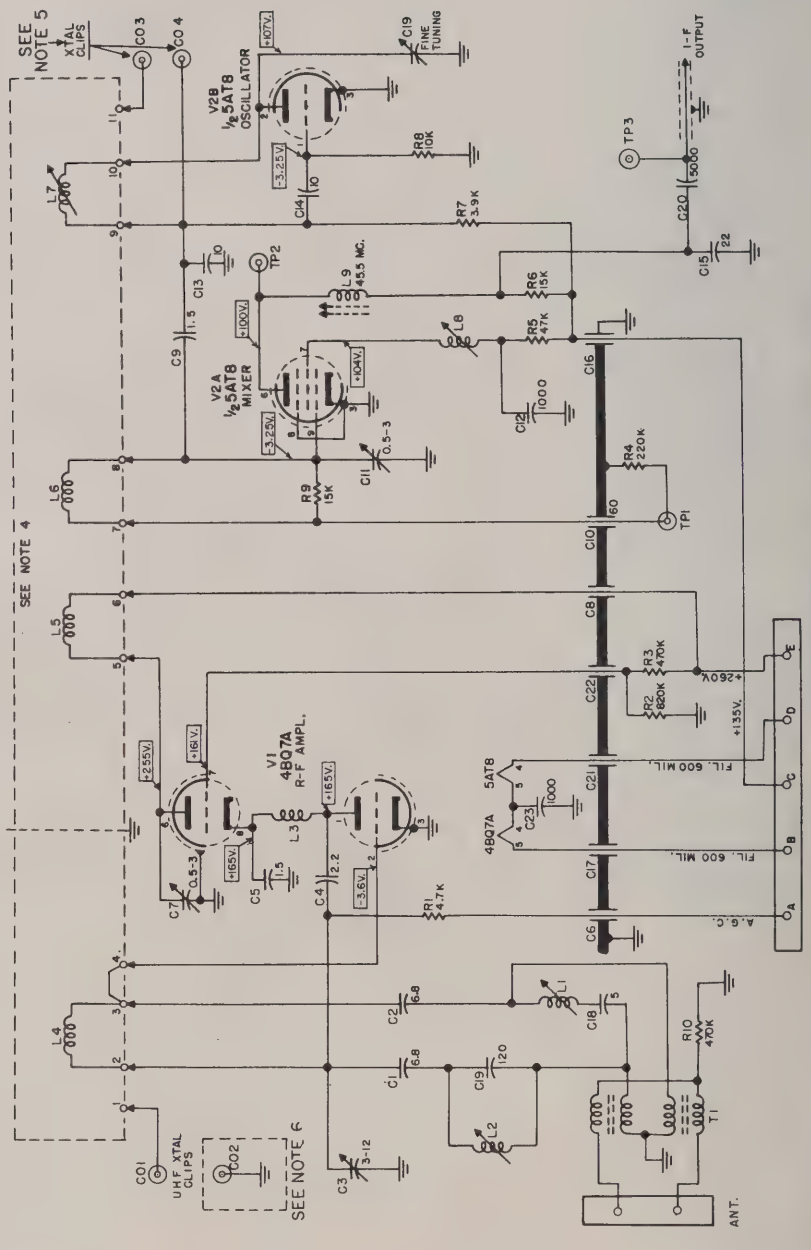
1. ALL CAPACITANCE VALUES ARE IN MMF. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
2. K = 1000.
3. FEED THRU CAPACITORS ARE 1000 MMF. UNLESS OTHERWISE NOTED.
4. FRONT AND REAR ROTORS OF SW1, SW3 & SW4 CONNECTED ELECTRICALLY.
5. CHANNEL SWITCH SHOWN IN CHANNEL 13 POSITION.
6. P1 AND S1 VIEWED FROM WIRING SIDE.
7. SOCKET VOLTAGE MEASUREMENTS TAKEN IN CHANNEL 3 POSITION. SEE NOTE 1 ON CHASSIS SCHEMATIC.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

VHF TURRET TUNER SCHEMATIC

(Part No. 159189-1, used on Chassis 468 only)

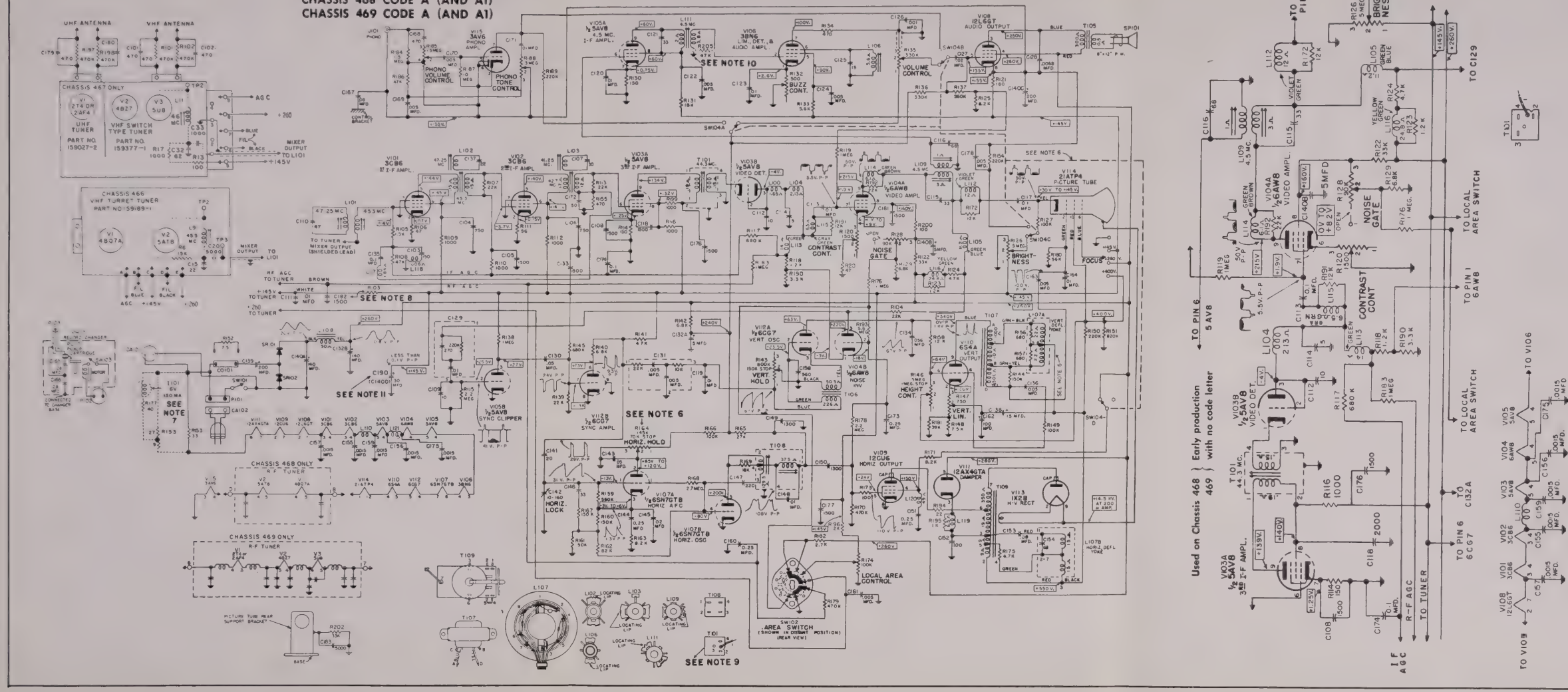


NOTES:

1. ALL CAPACITANCE VALUES ARE IN MMF. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
2. K = 1000.
3. FEED THRU CAPACITORS ARE 800 MMF. UNLESS OTHERWISE NOTED.
4. ONE OF TWELVE V. H. F. CHANNEL STRIPS MOUNTED IN DRUM.
5. DISREGARD C03 AND C04. THE CRYSTAL FOR WHICH THESE CLIPS WERE INTENDED IS MOUNTED ON THE UHF CHANNEL STRIPS.
6. CO2 IS INSTALLED WITH FIRST UHF CHANNEL STRIP. FOR INSTALLATION, SEE PAGE 4.
7. SOCKET VOLTAGE MEASUREMENTS, SEE NOTE 1 ON CHASSIS SCHEMATIC.

SCHEMATIC WIRING DIAGRAM

CHASSIS 468 CODE A (AND A1)
CHASSIS 469 CODE A (AND A1)



NOTES

CHASSIS 468 & 469

1. All voltages measured with an electronic voltmeter connected from socket lug to chassis. Some voltages are variable and voltages shown were measured with a normal picture on the picture tube and the contrast and brightness controls set for 50 volts peak to peak on the cathode (Pin #11) of the picture tube. Socket voltage tolerance, 10%. Input signal, 6000 uv. minimum for these readings. Noise Gate in open position and Area Switch in normal position.

   Slight discrepancies between voltages on the tuner schematic and those on the chassis schematic are the result of measuring tuner voltages on a different chassis than the one used for obtaining chassis voltages.

2. Supply voltage, 117 volts, 60 cycle AC.

3. K = 1000.

4. All capacitance values in mmf. and all resistance values in ohms unless otherwise noted.

5. Lug #3 connected to boost voltage, and Lugs #3, #8, and #5 connected internally on L107.

6. The Horizontal Hold Control, R164, used in Chassis 468 and 469 has an overall resistance of 145,000 ohm, with a 70,000 ohm stop. This control is marked with Part No. B-157802-1-2, B-157802-1-3, or later. It is directly interchangeable with an earlier control marked B-157802-1-1, which has an overall resistance of 170,000 ohms, with a 70,000 ohm stop. It will be noticed, however, that the control with the lower overall resistance gives a somewhat wider hold range.

7. The components R153, R177 and I101 shown in dotted lines are used on Chassis 469 only in place of the 33 ohm resistor R153 (solid lines) which is used on Chassis 468 only. See Schematic Replacement Parts List.

8. R103 is a 1000 ohm, 10%, 1/2 w. resistor on Chassis 468. On Chassis 469, R103 is a 220 ohm, 10%, 1/2 w. resistor. C182 is used on Chassis 469 only. For part numbers, see Schematic Replacement Parts List.

9. CODE CHANGES (Code A) - Early production Chassis 468 and 469 were not stamped with a code letter following the chassis number. Later production Chassis 468 Code A and 469 Code A incorporated changes which improved stability in the R. F. and Video I. F. stages.. The full schematic includes these changes. Circuits as they are found in the early production chassis are shown in the diagram on page 22.

   On early production chassis, terminal lug 3 of T101 was bent over against the center clip on the terminal board; the lug and clip were both grounded. In later production chassis (Code A) the terminal lug 3 was omitted and the coil winding connected internally to the center clip. Either type transformer may be replaced with Part No. 159527-1, since the coil winding itself has not been changed since the beginning of production.

10. CODE CHANGES (Code A1) - Some Chassis 468 (Code A) and 469 (Code A) have the numeral "1" stamped after the code letter to signify that a temporary circuit change is incorporated in those chassis.

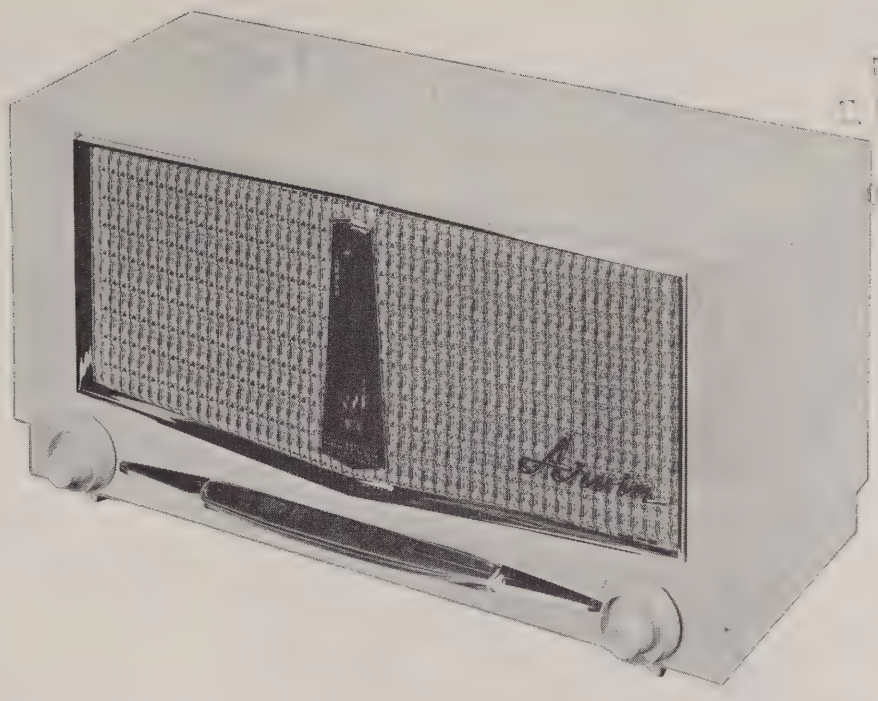
    In this instance, the temporary change is the addition of R205 across the secondary of L111. It improves stability in the sound I. F. stages whenever the input signal at the grid of the 4.5 mc. I. F. amplifier is reduced to very low levels.

11. On early production chassis C140A, B, and C are sections of a 3-section capacitor, Part No. 159318-1. C190 is a single section capacitor, Part No. 159519-1. On later production chassis, these are to be replaced by one 4-section capacitor, Part No. 159520-1. The proper symbol for C190 will then be C140D.

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ARVIN MODEL 956T1 (Ch. 1.42400)

PROPERTY OF
[illegible] BLANKENSHIP
[illegible] MEADE ST.
[illegible], COLORADO



ARVIN MODEL 956T1 (Ch. 1.42400)

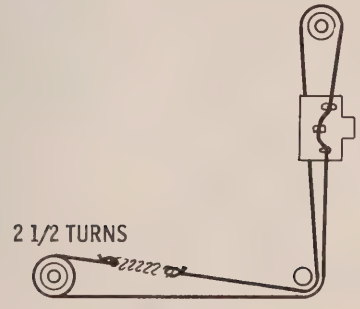
ARVIN MODEL 956T1 (Ch. 1.42400)

TRADE NAME	Arvin Model 956T1 (Ch. 1.42400)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC
RATING	.28 Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	540-1670KC

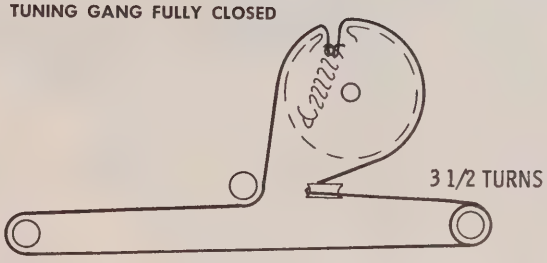
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum deflection.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	"



TONE STRING



TUNING STRING

DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H372

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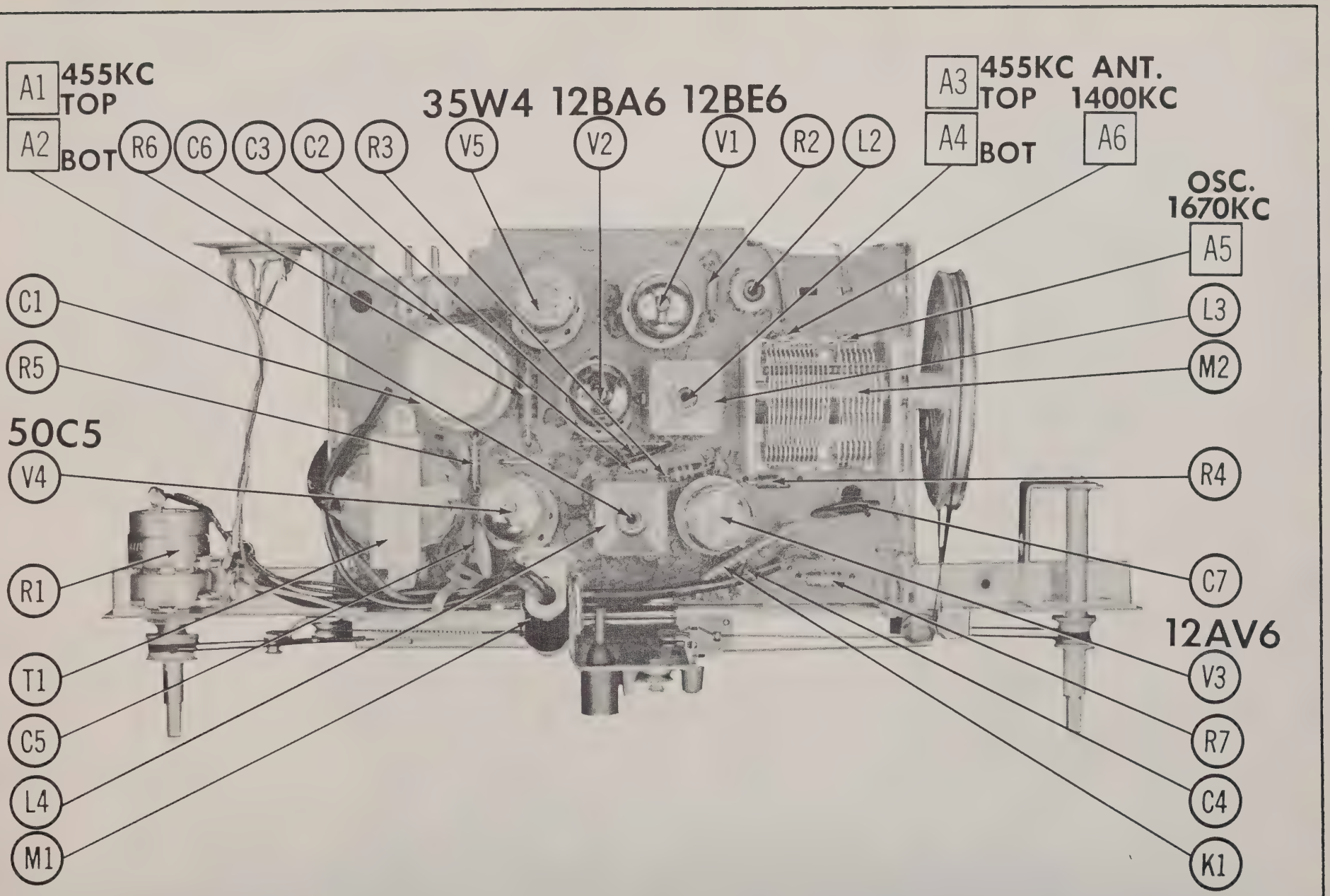
FOLDER 5



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. - AVC - AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	43711-1	PRS150/25V50 30/20	BBRT5315C	TCT3107	TDLT-15	FMT-327	R1404 *
B	▲30	150							
C	20	25							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	N2200
C3	150									
C4	2000			BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C5	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C7	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/2	44900-1	F1-41		♦	■ UE377S	Tone
B	500K			R2-41				Volume
C	Switch			KB-1				

♦ Concentrikit Equivalent; K-2 Kit, Base Elements and Shafts: B13-133, P1-102 (Panel). B13-133, R1-118 (Rear). 76-1 (Switch).

■ STA-LOC Equivalent, FB55A, OF1000, RU55A, IS1437, US-41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	NOTES
R2	22K			
R3	47K			
R4	2.2meg			

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	NOTES
R5	120Ω			
R6	1200Ω	1		
R7	330K			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	42700-13	Z1101	A-3025	A-3332	24S53	S-12X	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	6-8Ω	43365-1 ①	5A1Z6.4 ①	① Parallel and phase
SP2	5"	PM	6-8Ω	43365-2 ①	5A1Z6.4 ①	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Ant.	44852-1					Includes cabinet back.
L2	Osc. Coil	43644-1					
L3	Input IF	44282-1	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	44282-1	16-6780	BC-357	13-PC10	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	220mmf, 5000mmf, 250mmf, 5000mmf, 470K, 470K, 6.8meg	43743-2	Aerovox PA-512 Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Dial Lamp	23849	#47
M2	Tuning Cap.	45987	2 Gang (Ant. 17-360mmf)

CABINETS & CABINET PARTS

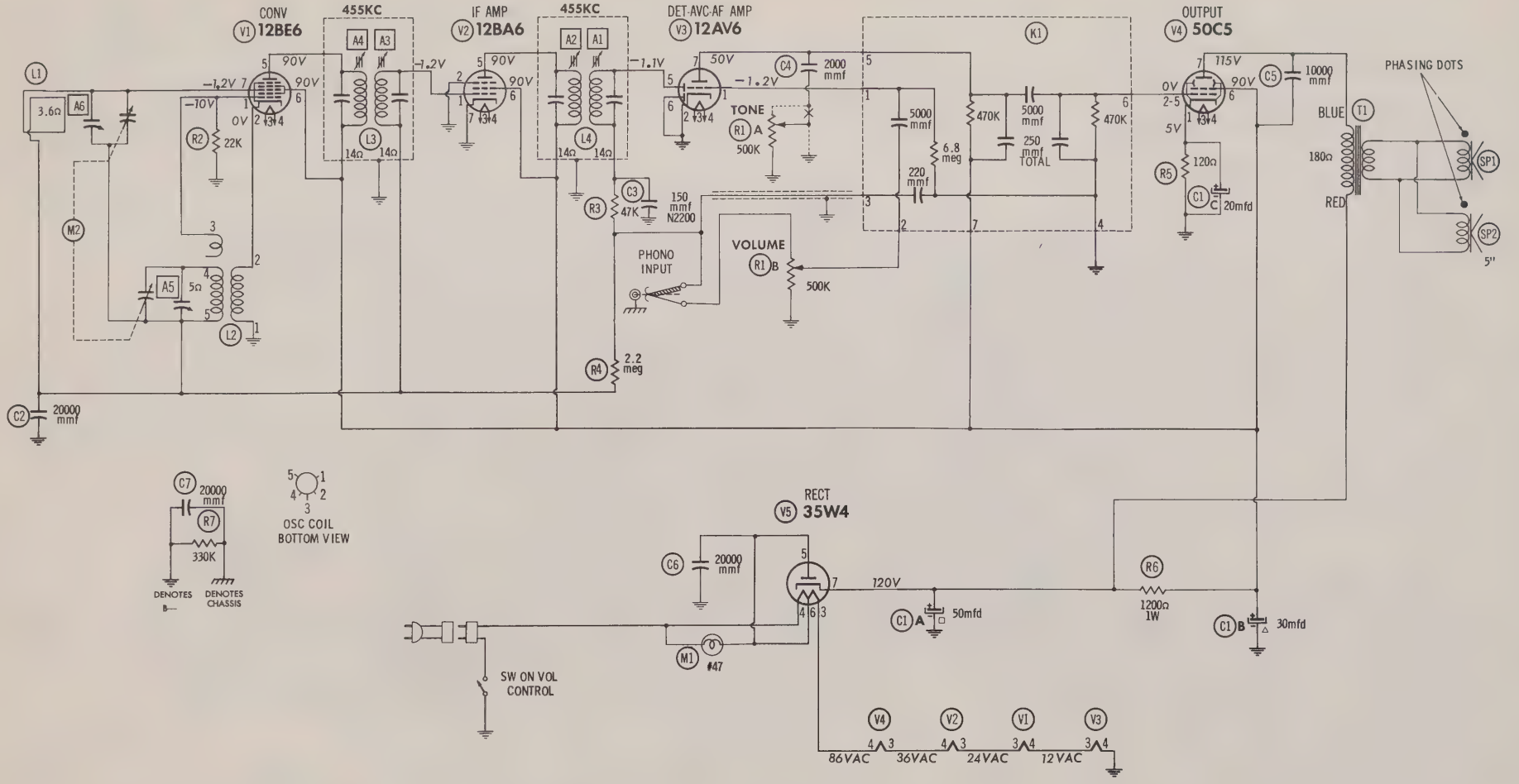
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	43284-17	On-Off-Volume & Tuning (Ivory)
Knob	43284-35	On-Off-Volume & Tuning (Turquoise)
Knob	43285-17	Tone & Trim (Ivory)
Knob	43285-35	Tone & Trim (Turquoise)
Cabinet	43397-17	Includes Radio Dial (Ivory)
Cabinet	43397-35	Includes Radio Dial (Turquoise)
Bezel	43279	Cabinet
Bezel	43296	Tone Indicator
Dial Scale	43299	
Dial Pointer	43391-2	Radio
Dial Pointer	43392-1	Tone

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.4Ω	24Ω	12Ω	†1200Ω	†1200Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	120Ω	470K	36Ω	86Ω	470K	†1200Ω	†180Ω
V5	35W4	NC	NC	86Ω	105Ω	100Ω	100Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder
*TRADE MARK

CHALLENGER
MODELS CHA33, CHA33Y

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHALLENGER
MODELS CHA33, CHA33Y

CHALLENGER
MODELS CHA33, CHA33Y

TRADE NAME	Challenger Models CHA33, CHA33Y
MANUFACTURER	Challenger Amplifier Co., P.O. Box 500, Paramus, N.J.
TYPE SET	AC Operated 3 Channel 33 Watt Audio Amplifier (Model CHA33Y has 3 Speed Manual Record Player)
TUBES (Seven)	Types 12AX7/ECC83 Mic 1-Mic 2 Preamplifier, 6AV6 Mixer, 12AX7/ECC83 AF Amp.-Phase Inv., (2) 6L6GB Output, (2) 5Y3GT Rectifier
POWER SUPPLY	110-120 Volt AC-60 Cycle RATING 1.1 Amp. @117 Volt AC (120Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H329

FOLDER 6

PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL CHA33

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Mic 1-Mic 2 Preamplifier	12AX7/ECC83
V2	Mixer	6AV6
V3	AF Amp. -Phase Inv.	12AX7/ECC83
V4	Output	6L6GB
V5	Output	6L6GB
V6	Rectifier	5Y3GT
V7	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CHALLENGER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	16	500		AFH1-59	BR1650		TMD-61	D-270	TVL-1980
C2A	5	450		AFH4-09	D0080	WP433.6	TMQ-9	Q-027	TVL-4759.7
B	5	450							
C	5	450							
D	5	450							
C3	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308

FIXED CAPACITORS

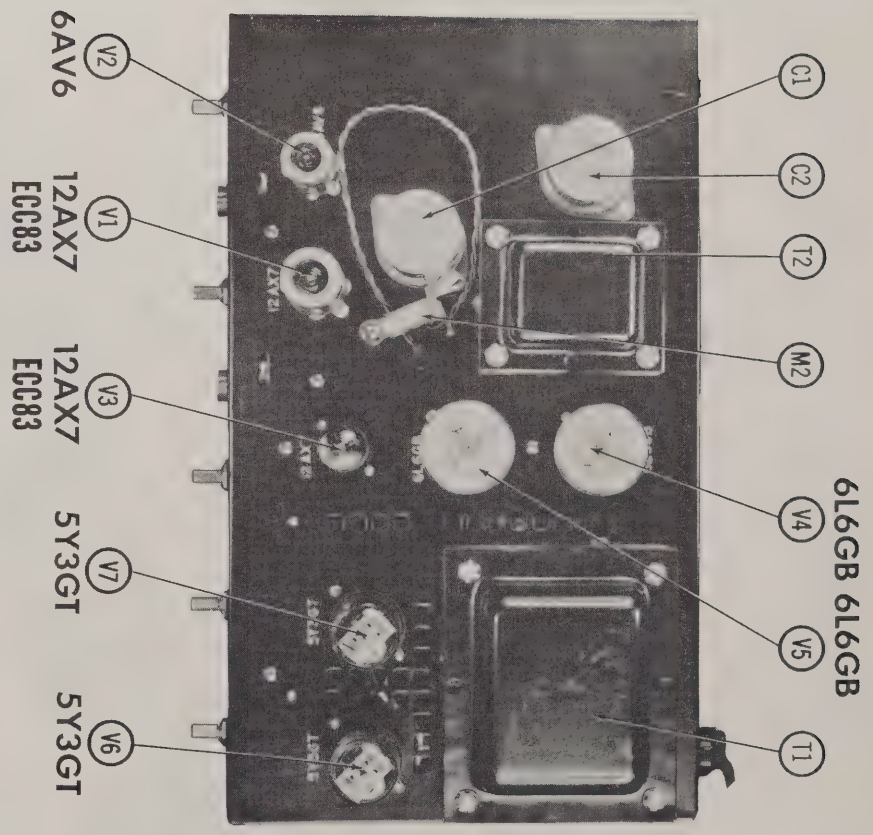
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CHALLENGER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C5	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C6	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C7	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C8	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C9	270				D6-271	5R5T27	ED-270		MS-327	10%
C10	2200					1R5D22	CY20C222K		MS-222	10%
C11	1000					1R5D1	ED-1000	MCB255	MS-21	10%
C12	.0056	200			D6-562		GP-5600			
C13	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C14	15000			BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	
C15	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C16	.033	400		P488N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C17	2200					1R5D22	CY20C222K		MS-222	10%

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CHALLENGER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	V417	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Microphone 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Microphone 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	CHALLENGER PART No.	NOTES
R6	3.3meg			
R7	220K			
R8	3.3meg			
R9	220K			
R10	220K			
R11	220K			
R12	270K			
R13	220K			
R14	470Ω			
R15	220K			
R16	100K			
R17	33K			
R18	47K			
R19	220K			
R20	220K			
R21	390Ω			

ITEM No.	RATING OHMS	RATING WATT	CHALLENGER PART No.	NOTES
R22	82K			
R23	100K	1		
R24	470K			
R25	220K			
R26	10K	1		
R27	2200Ω			
R28	220K			
R29	47K			
R30	5000Ω	7		
R31	15K	10		
R32	225Ω	7		
R33	270K			
R34	2200Ω	2		
R35	.68Ω			
R36	.68Ω			
R37	47Ω			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CHALLENGER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @1.1A	800VCT @.130A	5V @4A	6.3VCT @ 2.8A	T365-2					R-24B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA CHALLENGER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6000Ω CT	70V	T279-1						
		SEC. 2 16ΩTap @ 8Ω & 4Ω							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA CHALLENGER PART No. FUSE	CHALLENGER PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 250V S/B			313002. (3AG 2A 250V S/B)	342001	MDL2	HKP

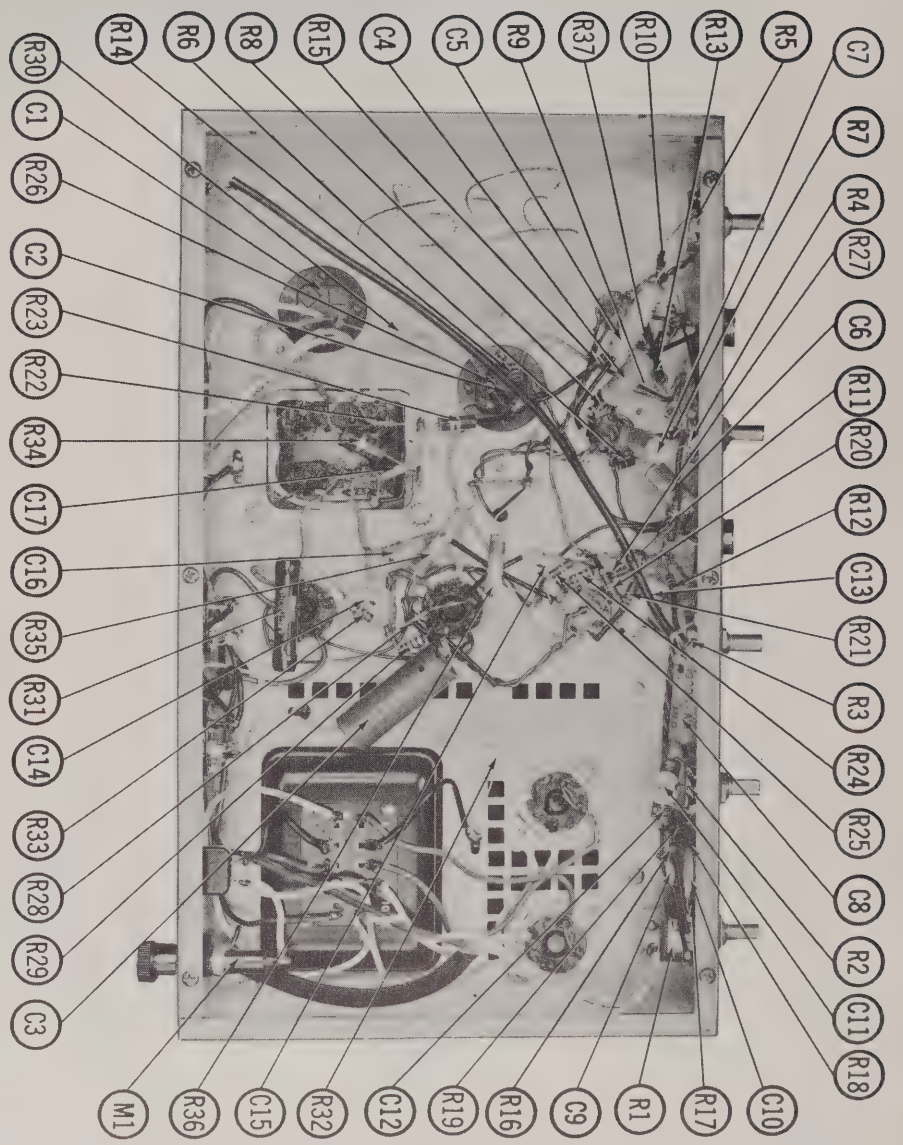
MISCELLANEOUS

ITEM No.	PART NAME	CHALLENGER PART No.	NOTES
M2	Pilot Lamp		#51

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW

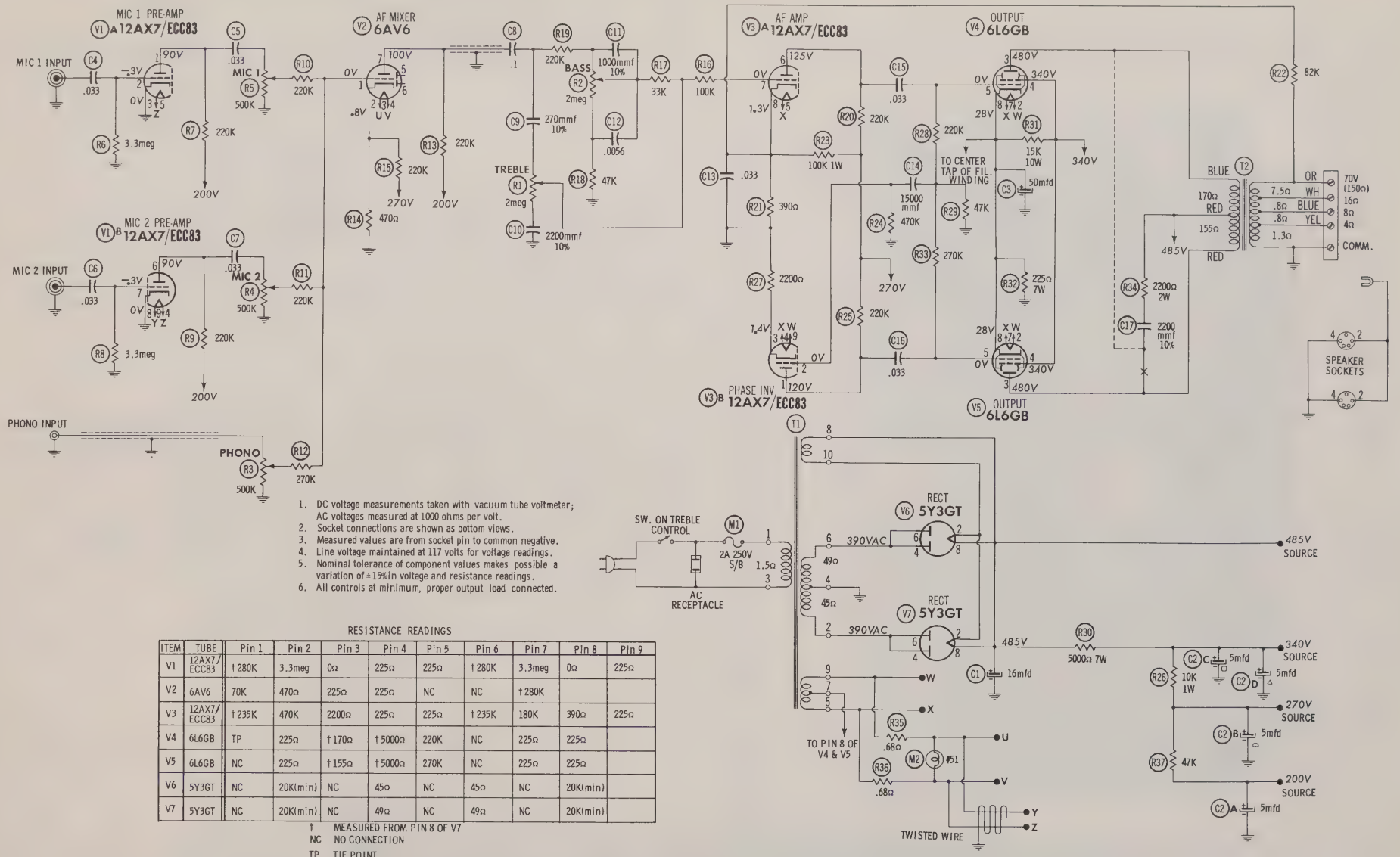


SET 391 FOLDER 6

FOLDER 6

CHALLENGER MODEL CHA33

CHALLENGER MODEL CHA33



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

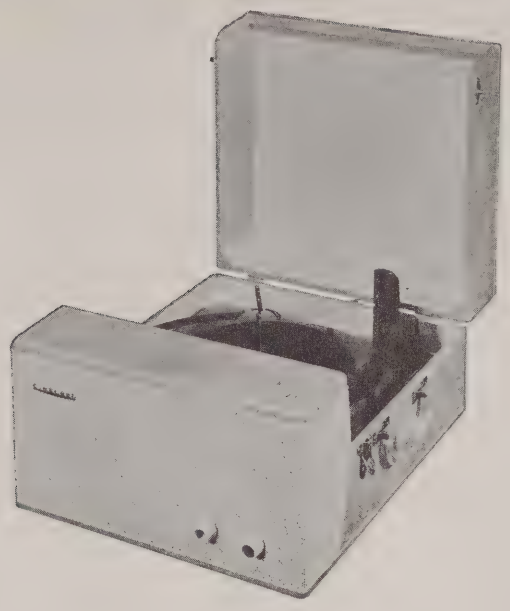
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7/ ECC83	†280K	3.3meg	0Ω	225Ω	225Ω	†280K	3.3meg	0Ω	225Ω
V2	6AV6	70K	470Ω	225Ω	225Ω	NC	NC	†280K		
V3	12AX7/ ECC83	†235K	470K	2200Ω	225Ω	225Ω	†235K	180K	390Ω	225Ω
V4	6L6GB	TP	225Ω	†170Ω	†5000Ω	220K	NC	225Ω	225Ω	
V5	6L6GB	NC	225Ω	†155Ω	†5000Ω	270K	NC	225Ω	225Ω	
V6	5Y3GT	NC	20K(min)	NC	45Ω	NC	45Ω	NC	20K(min)	
V7	5Y3GT	NC	20K(min)	NC	49Ω	NC	49Ω	NC	20K(min)	

† MEASURED FROM PIN 8 OF V7
NC NO CONNECTION
TP TIE POINT

PHOTOFACT* Folder

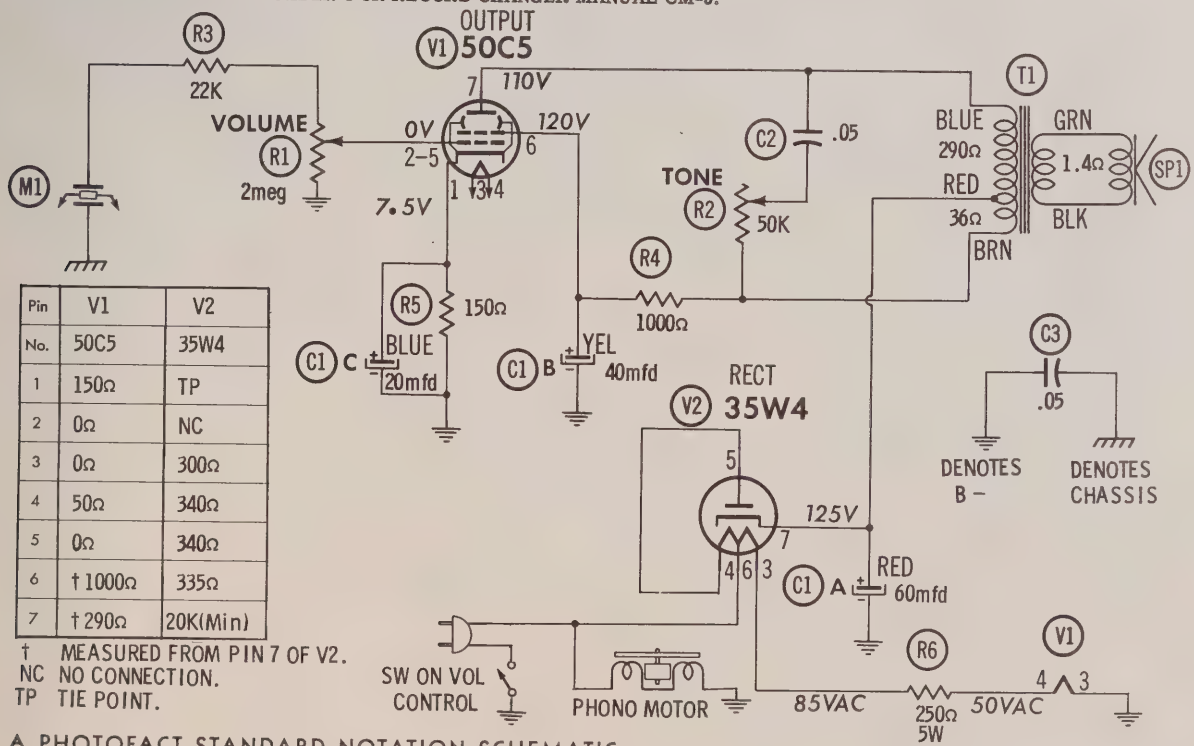
CRESCENT MODELS A-640A, A-640B

PROPERTY OF
BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TRADE NAME	Crescent Models A-640A, A-640B
MANUFACTURER	Crescent Industries, Inc., 7300 N. Lehigh Ave., Chicago 31, Illinois
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Two)	Types 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycle RATING .28 Amp. @ 117 Volts AC (28 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE CRESCENT MODEL 500 SERIES - PHOTOFACT SET 197-FOLDER 4 OR RECORD CHANGER MANUAL CM-5.



Pin No.	V1	V2
1	150Ω	TP
2	0Ω	NC
3	0Ω	300Ω
4	50Ω	340Ω
5	0Ω	340Ω
6	†1000Ω	335Ω
7	†290Ω	20K(Min)

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION.
TP TIE POINT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	50C5	

ITEM No.	USE	TYPE	NOTES
V2	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CRESCENT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	770124	PRS150/25V	BBRT8415C	WQ230	CDB-Q-1001	FMT-333	R2451 *
B	40	150		8040/20					
C	20	20							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CRESCENT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	200	770122	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C3	.05	200	770122	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CRESCENT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	740063					Volume & Switch
R2	50K	½	740062					Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	CRESCENT PART No.	NOTES
R3	22K		760005	
R4	1000Ω		760067	

ITEM No.	RATING OHMS	RATING WATT	CRESCENT PART No.	NOTES
R5	150Ω		760023	
R6	250Ω	5	760309	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA CRESCENT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	700044	Z1102 ①	A-3031 ①	A-3336 ①	24S50A ①	S-16X ①	① Drill new mounting hole.

SPEAKER

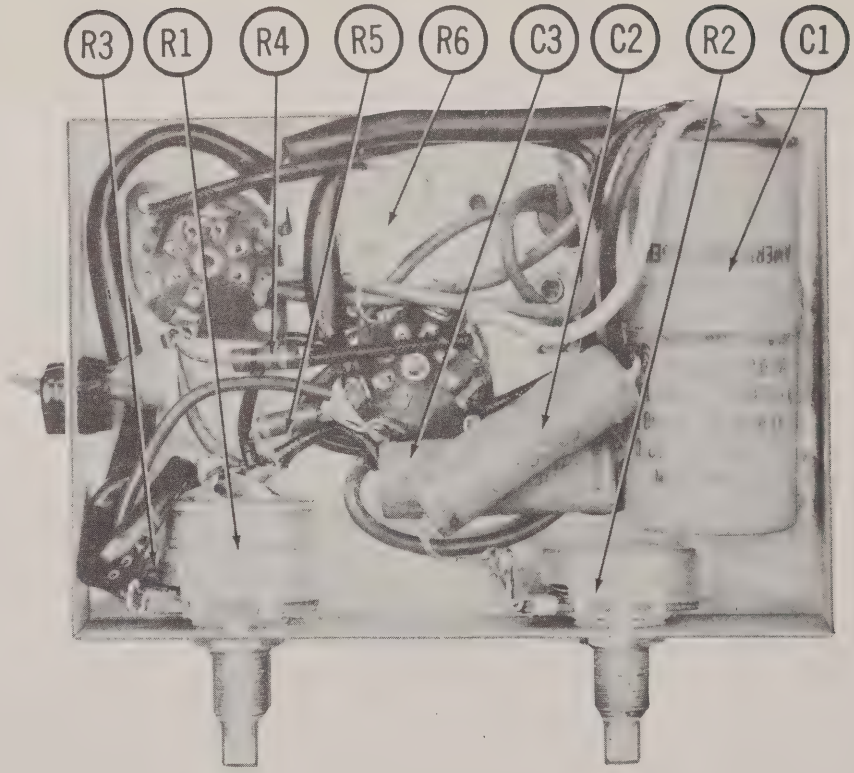
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA CRESCENT PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	011848	5A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA CRESCENT PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	720088	66-2	K-AG-J			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA CRESCENT PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	720111	*A-762 or †A-672 or ♦ A-672D	*W-39AGA or †W-39AGS or ♦ W-39AGD	* Metal † Jewel ♦ Diamond

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	310366	On-off-volume & tone
Knob	310064	Speed Selector
Knob	310226	On-off-reject Model A640B
Knob	310063	On-off-reject Model A640A
Cabinet & Lid	440264	

WIRING DATA

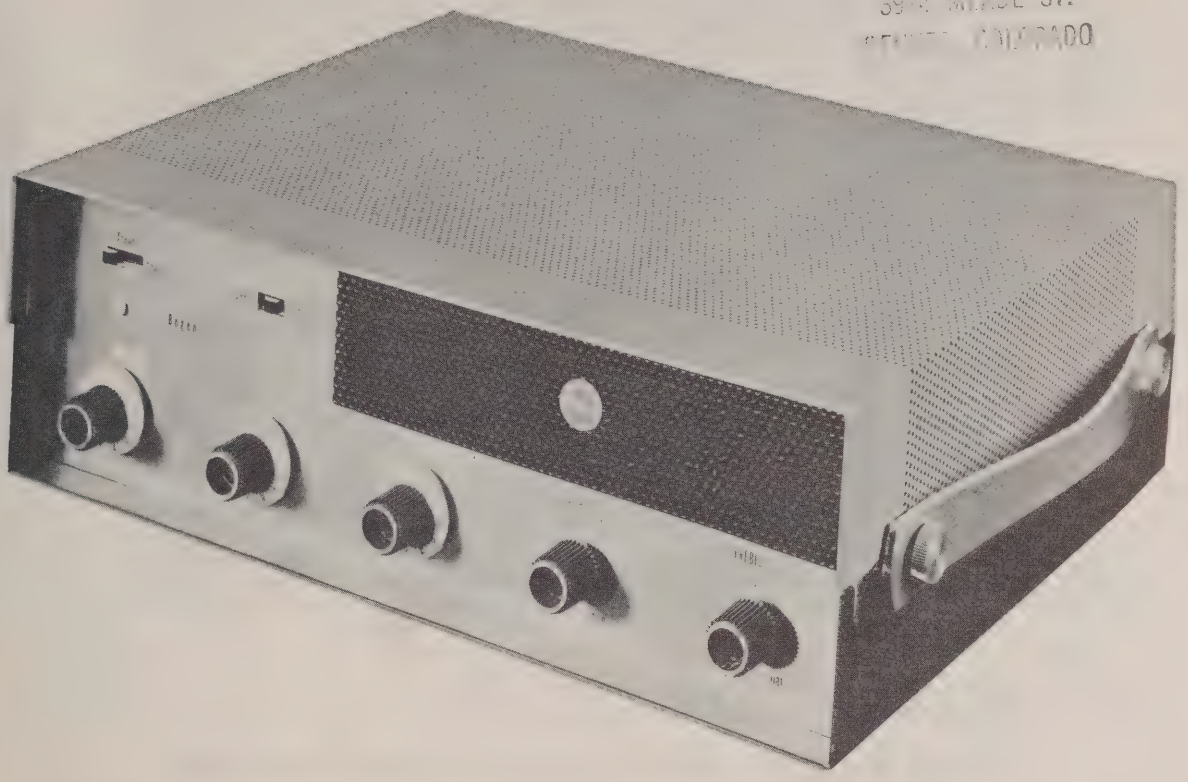
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder
*TRADE MARK

DAVID BOGEN MODEL L60

PROPERTY OF
L. F. BLANKENSHIP
3934 MEADE ST.
DENVER, COLORADO

DAVID BOGEN
MODEL L60



DAVID BOGEN
MODEL L60

TRADE NAME	David Bogen Model L60
MANUFACTURER	David Bogen Co., Inc. P.O. Box500, Paramus, N.J.
TYPE SET	AC Operated 6 Channel 60 Watt Audio Amplifier
TUBES	Twelve
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.1 Amp. @ 117 Volts AC (130 Watts)

VOLTAGE REGULATOR ADJUSTMENT (R6)

The voltage regulator (R6) should be adjusted if V5, V6, V7, V8 or V9 tubes are replaced.

1. Set "Volt Reg." Control (R6) and volume controls (R1, R2, R3) at minimum Allow the amplifier to warm up for four minutes.
2. Using an accurate low range DC voltmeter, connect the positive lead to terminal 1 of the "CUR MON" test strip. Connect the negative lead to ground.
3. Turn the voltage regulator (R6) for a SLIGHT meter deflection. Measure the voltage at terminals 1, 2, 3, and 4 on the "CUR MON" strip. Keep the meter connected to that terminal which measures the highest voltage.
4. Turn the voltage regulator (R6) until the meter indicates .25 volt.

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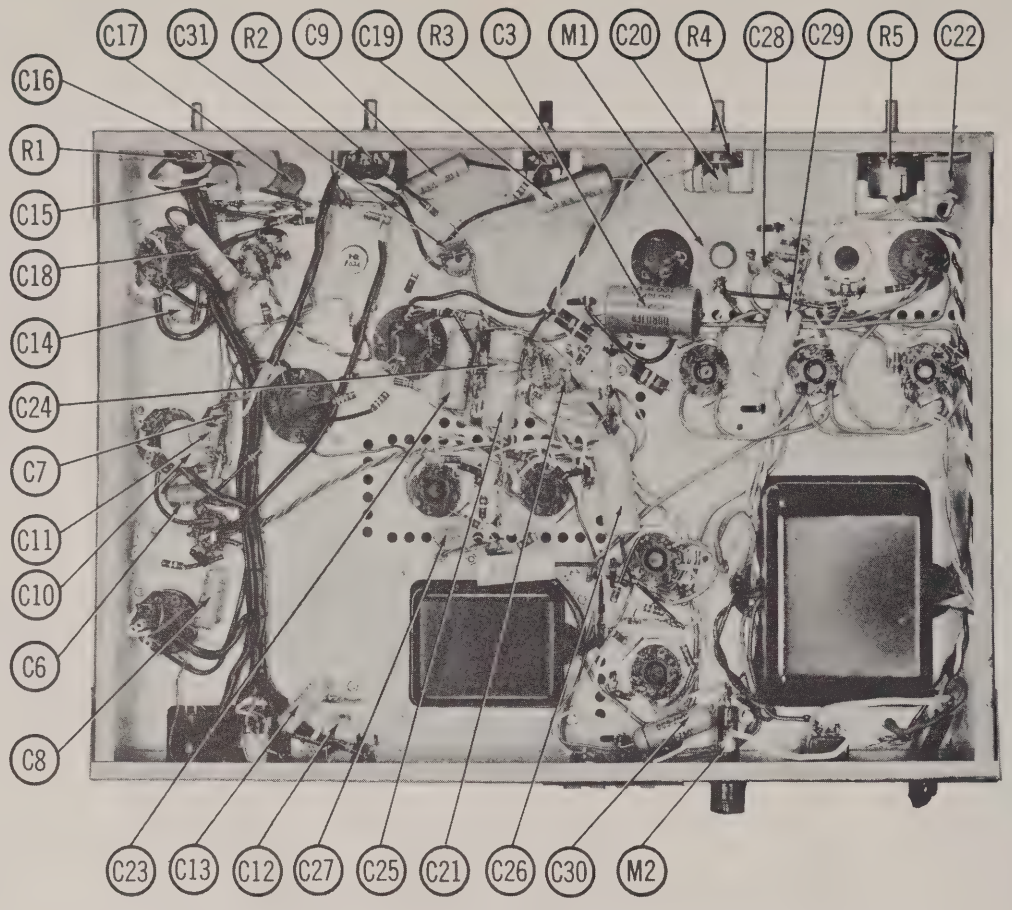
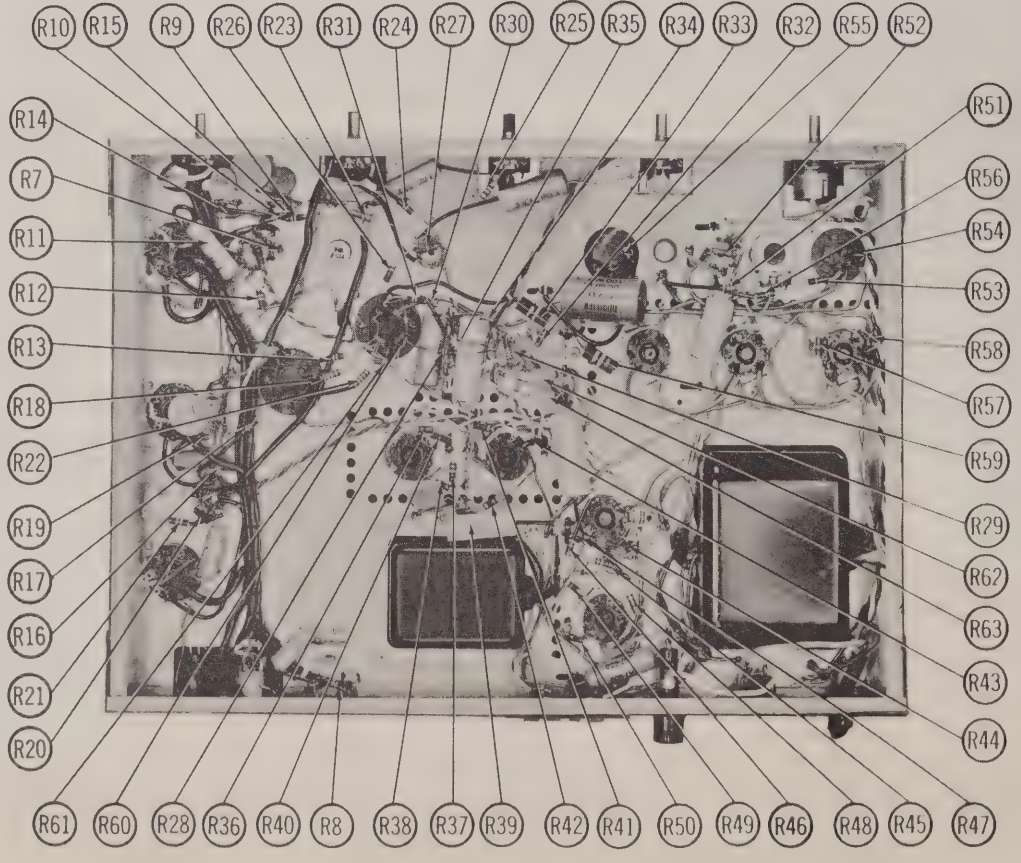


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Mic 1-Tuner-Phono Preamp.	12AX7 / ECC83
V2	Mic 2-Mic3 Preamplifier	12AX7/ ECC83
V3	AF Amplifier	6AV6
V4	AF Amp. -Phase Inv.	6U8
V5	Output	6AV5GA
V6	Output	6AV5GA

ITEM No.	USE	TYPE
V7	Output	6AV5GA
V8	Output	6AV5GA
V9	Volt. Reg. -Reg. Cont.	6CM7
V10	Rectifier	5Y3GT
V11	Rectifier	5Y3GT
V12	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DAVID BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C2	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C3	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414
C4A	▲5	200		AFH4-09	D0080	WP433.6	TMQ-9	Q-027	TVL-4759.7
B	5	200							
C	■5	200							
D	▲5	200							
C5A	▲10	350		AFH4-19-10	D0179.3	FP474.5	TMQ-113	Q-035	TVL-4826
B	10	350						MT-4510	
C	■20	450							
D	▲20	450							

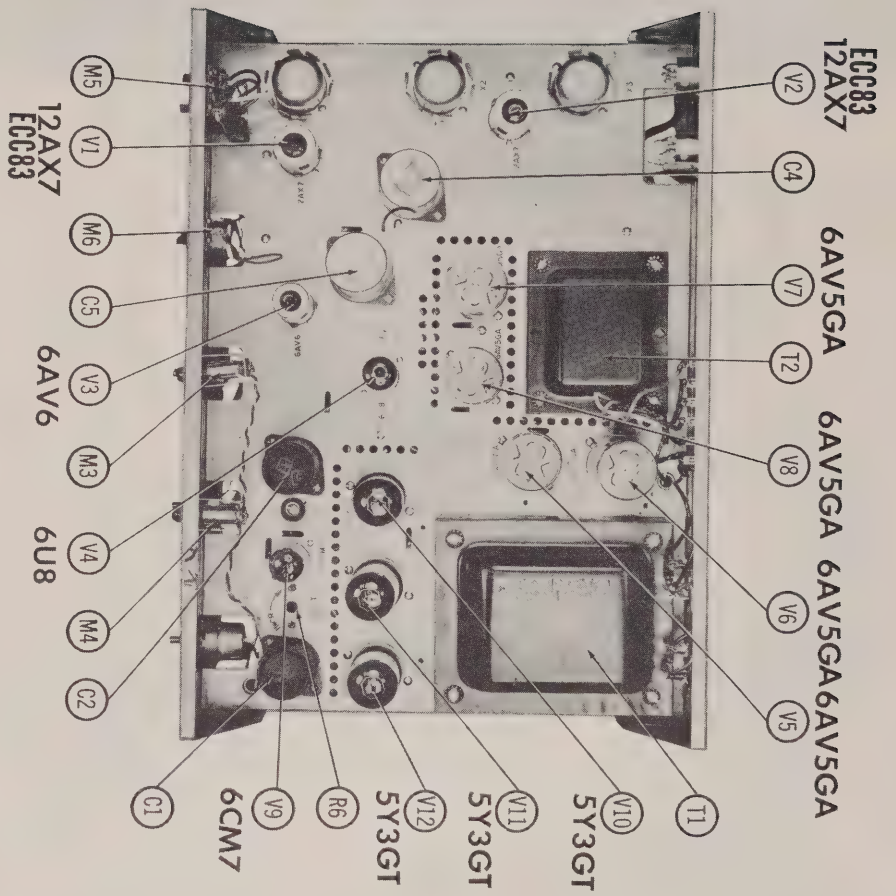
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DAVID BOGEN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C7	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C8	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C9	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C10	4700					1R5D47	CY20C472K		MS-247	10%
C11	1500					1R5D15	ED-1500		MS-215	10%
C12	68			NP0-DI68	DD-680	L10Q68	ED-68		MS-468	10%
C13	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C14	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C15	1500					1R5D15	ED-1500		MS-215	10%
C16	4700					1R5D47	CY20C472K		MS-247	10%
C17	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①
C18	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C19	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C20	820					1R5T82	ED-820		MS-382	10%
C21	4.7			NP0-DI4.7	TCZ-4R7	C10V47C	TC0-4.7	ZT-5547	5TCCB-V47	10%
C22	3300					1R5D33	CY20C332K		MS-233	10%
C23	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C24	100			NP0-DI100	DD-101	L10T1	ED-100	MCB235	MS-31	10%
C25	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C26	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C27	3300	1000								10%
C28	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C29	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C30	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C31	15000			BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	

① Some version many use 15000mmf in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DAVID BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Input
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 3
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1.5meg	½	V407	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	500K	½*	V377	B-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R6A	100K	½	V392	AB-40*	A47-100K-S*	B11-128	TA15L	Volt Regulator
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	

* Enlarge Mounting Hole to 3/8"

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DAVID BOGEN PART No.	NOTES
	OHMS	WATT		
R7	1.5meg			
R8	100K			
R9	100K			
R10	150K			
R11	3.3meg			
R12	100K			
R13	100K			
R14	56K			
R15	390K			
R16	3.3meg			
R17	100K			
R18	47K			
R19	180K			
R20	3.3meg			
R21	100K			
R22	47K			
R23	220K			
R24	220K			
R25	330K			
R26	56K			
R27	1500Ω			
R28	470K			
R29	390K			
R30	390Ω			
R31	22K			
R32	100K			
R33	200K 5%	2		
R34	150K			
R35	22K			

ITEM No.	RATING		DAVID BOGEN PART No.	NOTES
	OHMS	WATT		
R36	1000Ω			
R37	220K			
R38	47Ω			
R39	1000Ω	7		
R40	15Ω 5%			
R41	1000Ω			
R42	47Ω			
R43	15Ω 5%			
R44	1000Ω			
R45	220K			
R46	47Ω			
R47	15Ω 5%			
R48	1000Ω			
R49	47Ω			
R50	15Ω 5%			
R51	68K			
R52	1meg			
R53	2.7meg			
R54	1meg			
R55	1meg			
R56	680K			
R57	15Ω			
R58	15Ω			
R59	27K	2		
R60	22K			
R61	33K			
R62	0.47	1		
R63	0.47	1		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	DAVID BOGEN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.1A	870VCT @ .052A Tap @ 37V @ .001A	5V @ 6A	6.3VCT @ 7A	T3150					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	DAVID BOGEN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3300Ω CT	70V (83Ω) SEC2 16Ω Tap @ 8Ω, 4Ω	T2124						

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DAVID BOGEN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.001A	H373	1263A	RS065	10	

FUSE

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DAVID BOGEN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A 125V S/B			313003. (3AG 3A 125V S/B)	342001	MDX3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M3	Pilot Lamp		#47
M4	Pilot Lamp		#47
M5	Switch	S475	Selector (Slide Type DPDT)
M6	Switch	S381	Speech Filter (Slide Type SPDT)

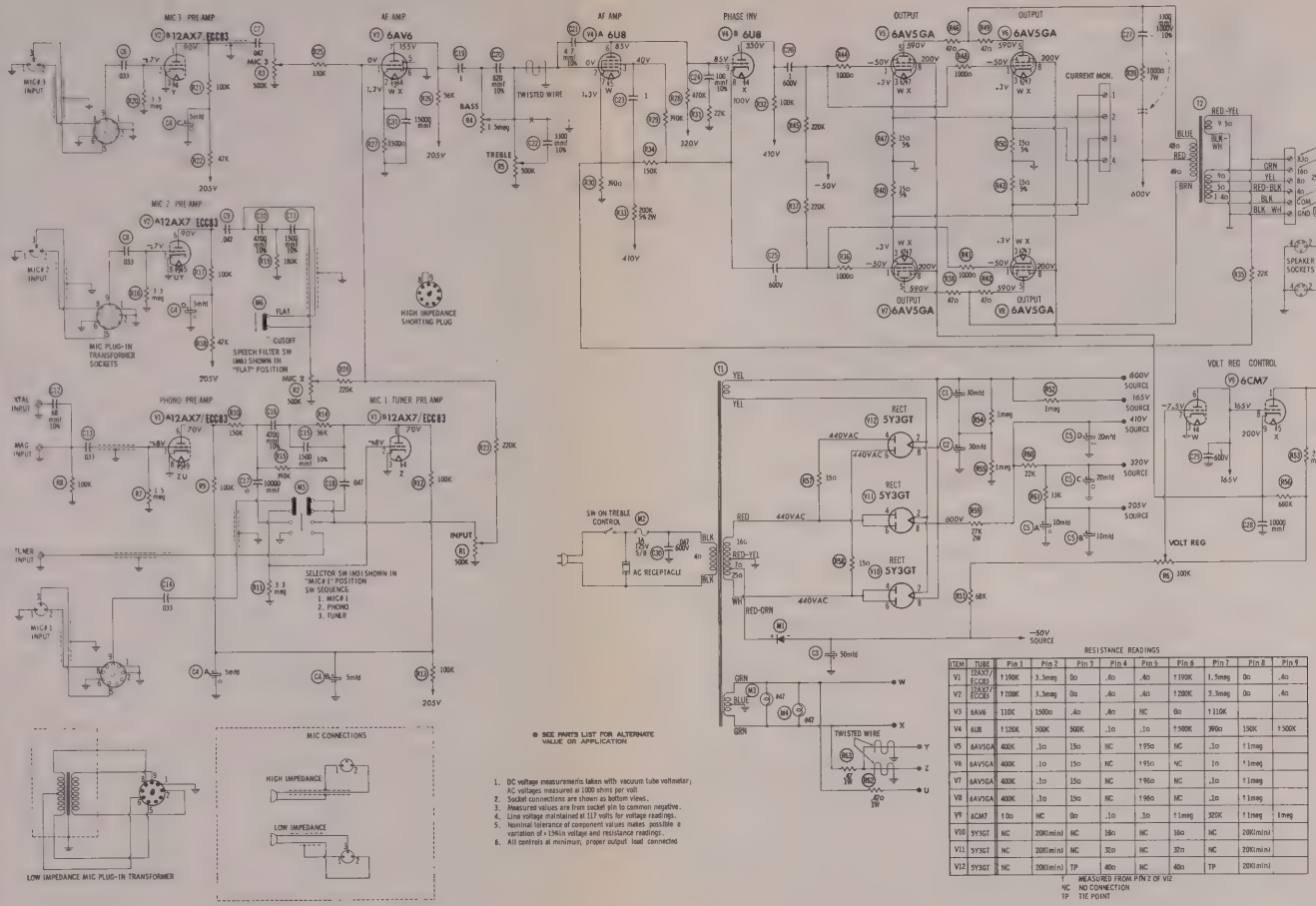
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



* SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7/ ECC83	↑190K	3.3meg	0Ω	.4Ω	.4Ω	↑190K	1.5meg	0Ω	.4Ω
V2	12AX7/ ECC83	↑200K	3.3meg	0Ω	.4Ω	.4Ω	↑200K	3.3meg	0Ω	.4Ω
V3	6AV6	110K	1900Ω	.4Ω	.4Ω	NC	0Ω	↑110K		
V4	6U8	↑120K	500K	500K	.1Ω	.1Ω	↑500K	390Ω	150K	↑500K
V5	6AV5GA	400K	.1Ω	15Ω	NC	↑95Ω	NC	.1Ω	↑1meg	
V6	6AV5GA	400K	.1Ω	15Ω	NC	↑95Ω	NC	1Ω	↑1meg	
V7	6AV5GA	400K	.1Ω	15Ω	NC	↑96Ω	NC	.1Ω	↑1meg	
V8	6AV5GA	400K	.1Ω	15Ω	NC	↑96Ω	NC	.1Ω	↑1meg	
V9	6CM7	↑0Ω	NC	0Ω	.1Ω	.1Ω	↑1meg	320K	↑1meg	1meg
V10	5Y3GT	NC	20K(min)	NC	16Ω	NC	16Ω	NC	20K(min)	
V11	5Y3GT	NC	20K(min)	NC	32Ω	NC	32Ω	NC	20K(min)	
V12	5Y3GT	NC	20K(min)	TP	40Ω	NC	40Ω	TP	20K(min)	

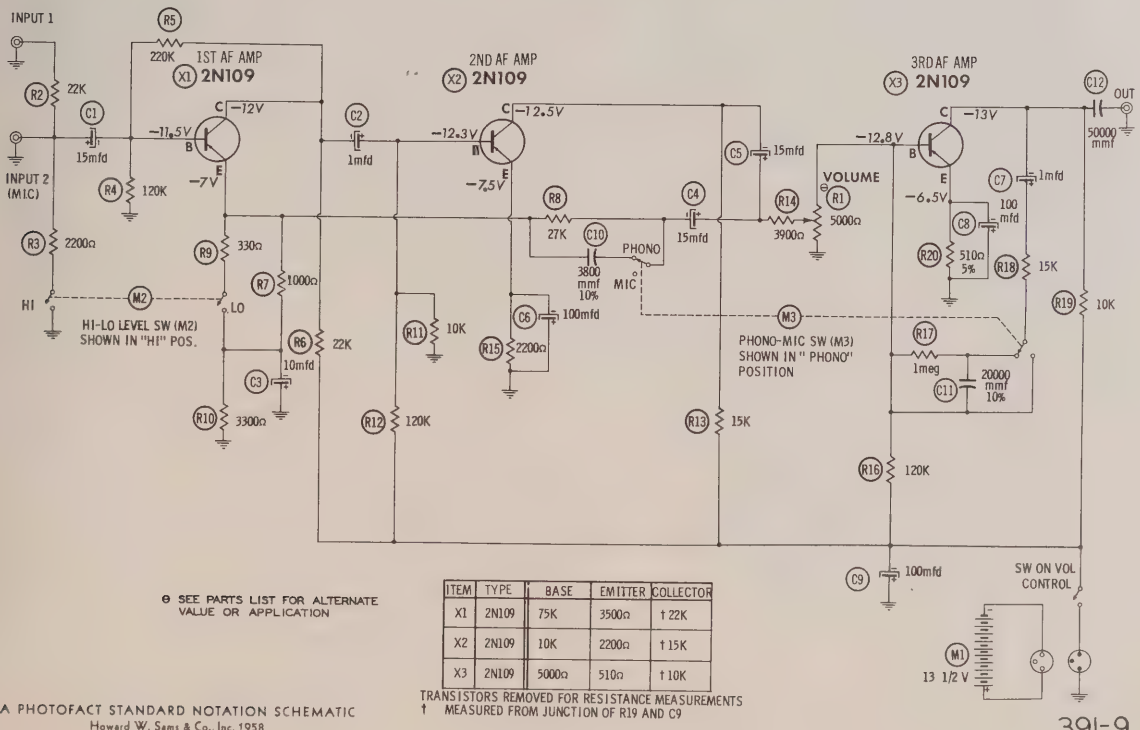
↑ MEASURED FROM P/N 2 OF V12
NC NO CONNECTION
TP TIE POINT

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

FISHER
MODEL TR-1

TRADE NAME	Fisher Model TR-1
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.
TYPE SET	Battery Operated 2 Channel Transistorized Preamplifier
POWER SUPPLY	13.5 Volts DC RATING 1.8MA @ 13.5 Volts DC

FISHER
MODEL TR-1



Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N109	75K	3500Ω	†22K
X2	2N109	10K	2200Ω	†15K
X3	2N109	5000Ω	510Ω	†10K

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM JUNCTION OF R19 AND C9

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

391-9

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H386

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N109	1st AF Amplifier	2N180	2N360	2N35	
X2	2N109	2nd AF Amplifier	2N180	2N360	2N35	
X3	2N109	3rd AF Amplifier	2N180	2N360	2N35	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	15	6	C-50051-3	PWE6015	NL15-6	TT6X15	ML20-6		TE-1089
C2	1	25	C-50051-1	PWE25001			ML1-25		R2581 *
C3	10	3	C-50051-2	PWE3010	NL10-3	TT3X10	ML10-6		TE-1053
C4	15	6	C-50051-3	PWE6015	NL15-6	TT6X15	ML20-6		TE-1089
C5	15	12	C-50051-4	XPP-12015	NL15-25	TT25X15	ML20-15		TE-1205
C6	100	3	C-50051-5	PWE3100	NL100-6	TT6X100	ML100-3		TE-1102
C7	1	25	C-50051-1	PWE25001			ML1-25		R2581 *
C8	100	3	C-50051-5	PWE3100	NL100-6	TT6X100	ML100-3		TE-1102
C9	100	15	C-584-121	PWE25100	BBR100-15				TE-1162

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper. Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	3800		C-584-115							10%
C11	20000		C-584-116							10%
C12	50000		C-556-122	BPD-05					TG-S50	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	584-131					Volume & Switch ①

① Part #R584-111 may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

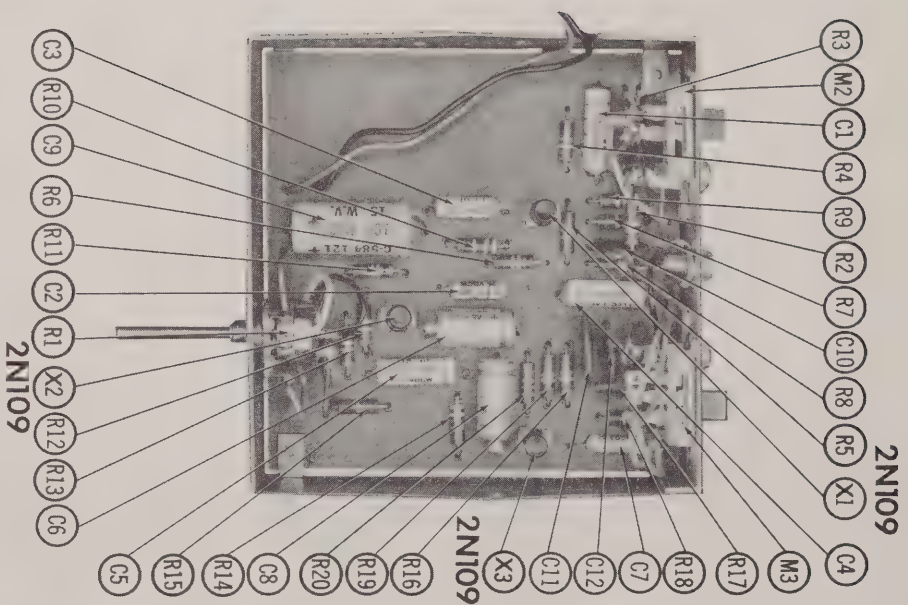
ITEM No.	RATING		FISHER PART No.	NOTES
	OHMS	WATT		
R2	22K		RC-20BF223K	
R3	2200Ω		RC-20BF222K	
R4	120K		RC-20BF124K	
R5	220K		RC-20BF224K	
R6	22K		RC-20BF223K	
R7	1000Ω		RC-20BF102K	
R8	27K		RC-20BF273K	
R9	330Ω		RC-20BF331K	
R10	3300Ω		RC-20BF332K	

ITEM No.	RATING		FISHER PART No.	NOTES
	OHMS	WATT		
R11	10K		RC-20BF103K	
R12	120K		RC-20BF124K	
R13	15K		RC-20BF153K	
R14	3900Ω		RC-20BF392K	
R15	2200Ω		RC-20BF222K	
R16	120K		RC-20BF124K	
R17	1meg		RC-20BF105K	
R18	15K		RC-20BF153K	
R19	10K		RC-20BF103K	
R20	510Ω 5%		R-20BF510J	

BATTERIES

ITEM No.	VOLTAGE	FISHER PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	13.5V			XX9		239		M-1900		1900	

CHASSIS—TOP VIEW



MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M2	Switch	S-584-112	Hi-Lo Level (Slide Type DPST)
M3	Switch	S-505-117	Phono-Mic (Slide Type DPDT)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E-584-119	On-Off-Volume

WIRING DATA

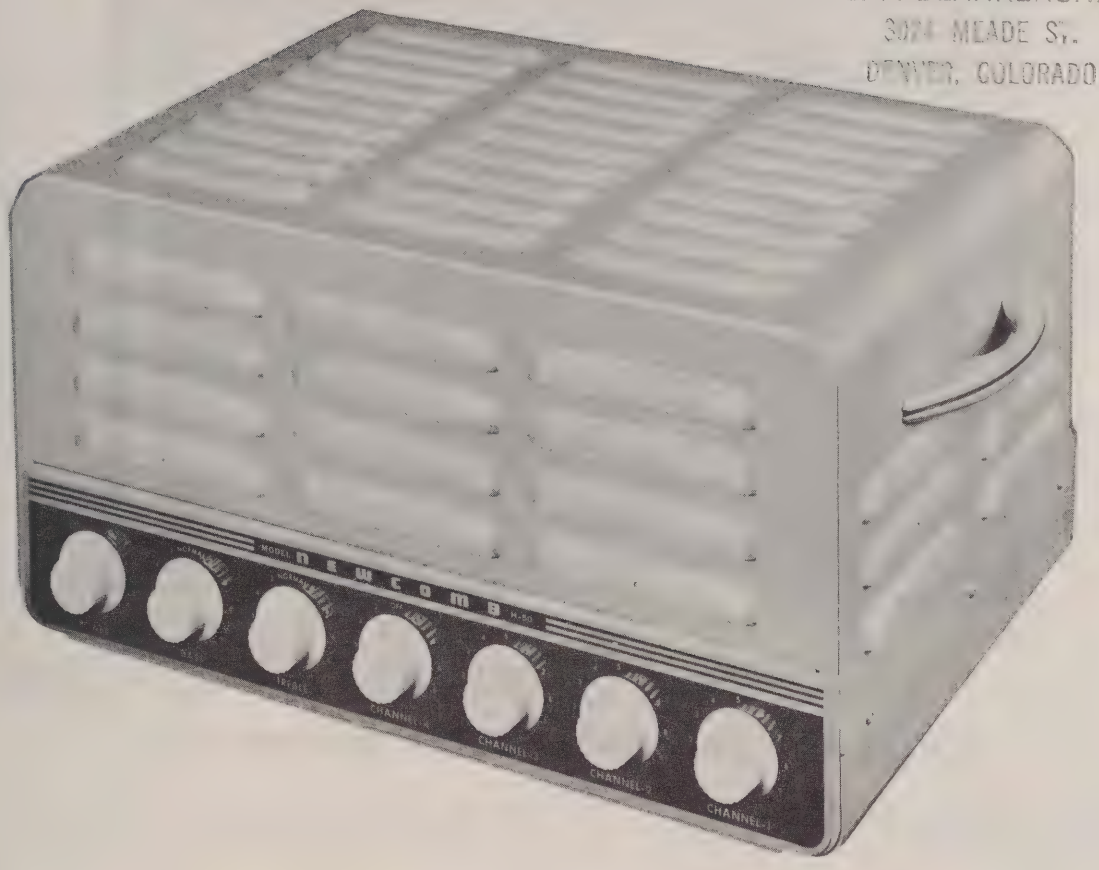
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT* Folder
*TRADE MARK

NEWCOMB MODEL H-50

PROPERTY OF
L. F. BLANKENSHIP
3074 MEADE ST.
DENVER, COLORADO

NEWCOMB
MODEL H-50



NEWCOMB
MODEL H-50

TRADE NAME	Newcomb Model H-50		
MANUFACTURER	Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, California		
TYPE SET	AC Operated 4 Channel 50 Watt Audio Amplifier		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	1.9 Amp. @ 117 Volts AC (210 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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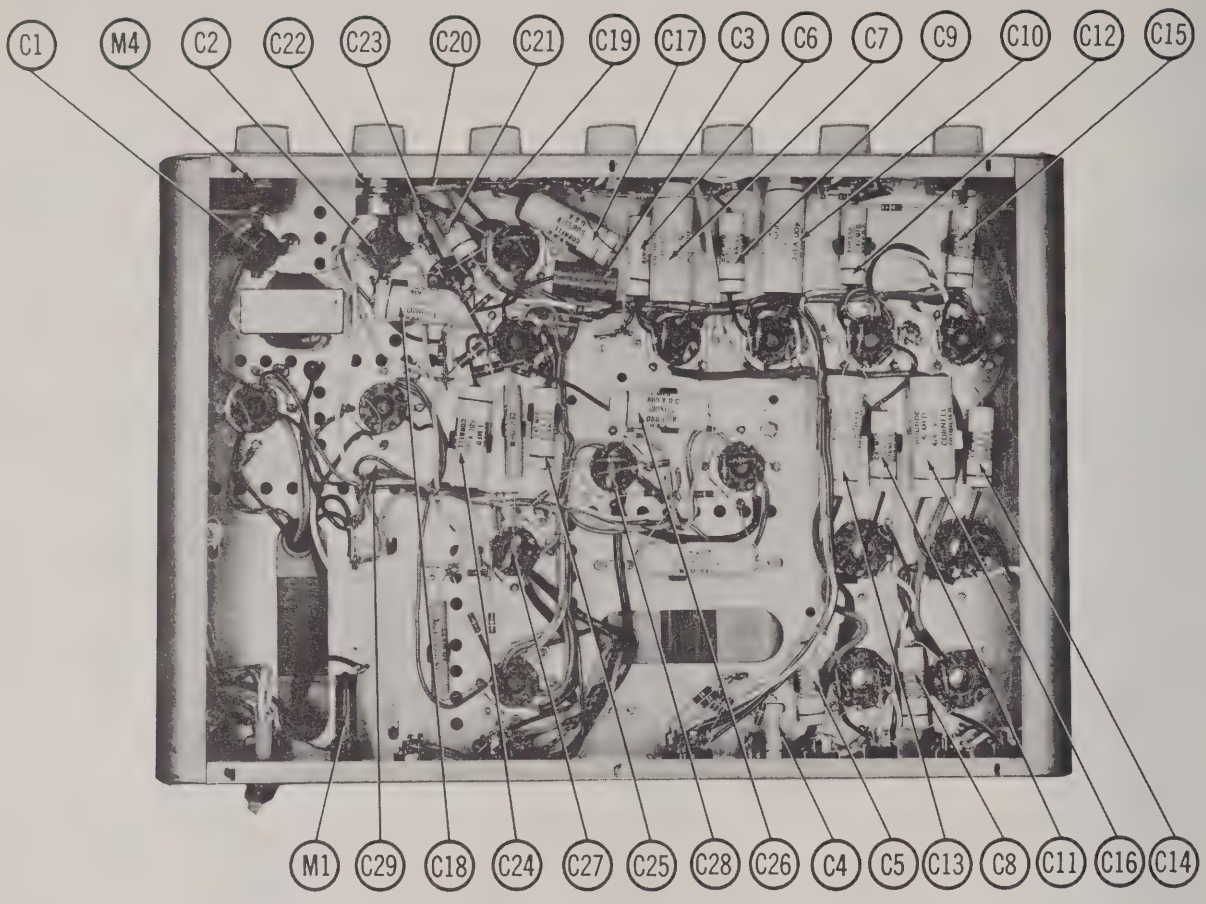
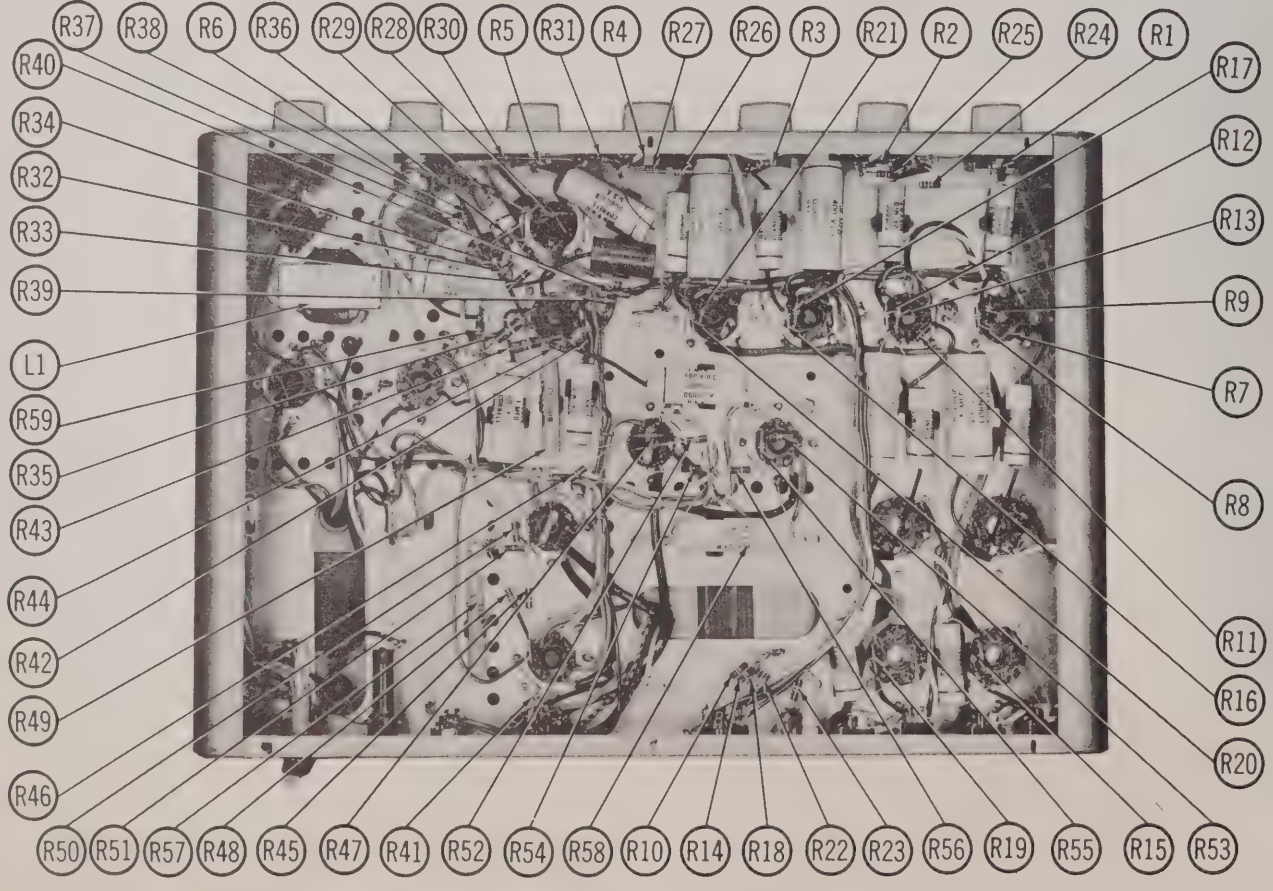


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic 1 Preamplifier	6SF5	
V2	Mic 2 Preamplifier	6SF5	
V3	Mic 3 Preamplifier	6SF5	
V4	Mic 4 Preamplifier	6SF5	
V5	AF Mixer	6SJ7	
V6	AF Amp. - Phase Inv.	6SN7GTB	
V7	Output	6L6GB	
V8	Output	6L6GB	
V9	Output	6L6GB	
V10	Output	6L6GB	
V11	Rectifier	5U4GB	
V12	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲60	500	CE-33	AFH3-53	C0373			T-205	R2409 *
B	▲10	475						MT-4710	
C2A	▲20	475	CE-30	AFH4-19-10		FP474.5		Q-070	R2405 *
B	■10	475				TC36		MT-0525	
C	▲10	475							
D	25	50							
C3	25	50	CE-9	PRS50V25	BBR25-50	TC36	TD-25-50	MT-0525	TVA-1306

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

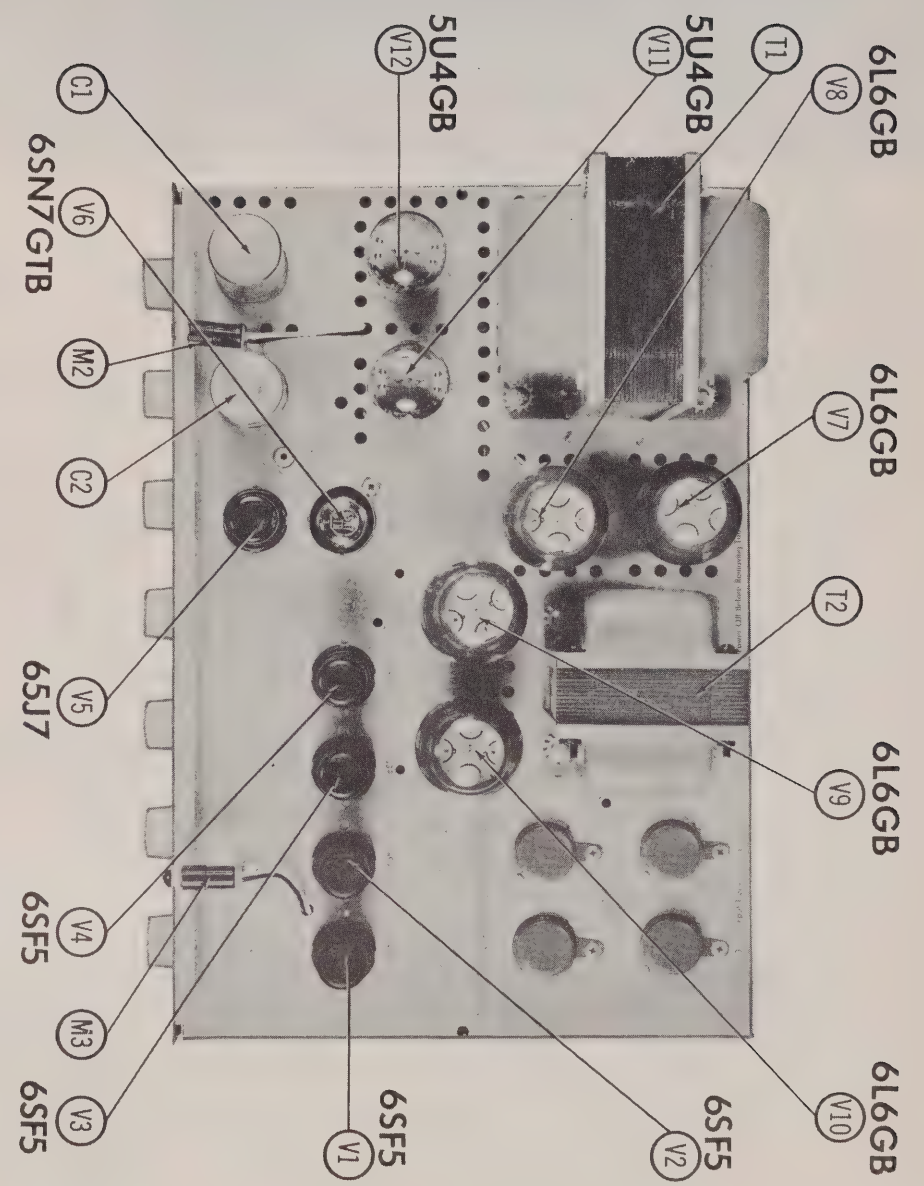
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	NEWCOMB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.004	600	CP-66	P688N-004	D6-402	CUB6D4	GP-4000	GEM-624	6TM-D4	
C5	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C6	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C7	.5	400	CP-74	P488N-5		CUB6P5		GEM-405	4TM-P5	
C8	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C9	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C10	.5	400	CP-74	P488N-5		CUB4P5		GEM-405	4TM-P5	
C11	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C12	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C13	.5	400	CP-74	P488N-5		CUB4P5		GEM-405	4TM-P5	
C14	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C15	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C16	.5	400	CP-74	P488N-5		CUB4P5		GEM-405	4TM-P5	
C17	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C18	.25	400	CP-65	P488N-25		CUB4P25		GEM-4025	4TM-P25	
C19	470		CM-25	SI 470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C20	.004	600	CP-66	P688N-004	D6-402	CUB6D4	GP-4000	GEM-624	6TM-D4	
C21	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C22	1500		CM-27	SI 1500	D6-152	LT6D15	GP-1500	UC-5215	5GA-D15	
C23	470		CM-25	SI 470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C24	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C25	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C26	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C27	350		CM-26	SI 360	DD-351	L10T36	GP-360		5GA-T35	
C28	350		CM-26	SI 360	DD-351	L10T36	GP-360		5GA-T35	
C29	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Channel 1 (Mike)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Channel 2 (Mike)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Channel 3 (Mike)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	1meg	½	RV-83	BT-71	A47F5-1meg	QVC-539X	UT-443	Channel 4 (Phono-Mike) Tap ② 500K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5	6meg	½	RV-60					Treble, Tap ② 500K
R6A	5meg	½	RV-57					Bass
B	5meg	½						Bass

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R7	18meg		RR-140	
R8	270K		RR-31	
R9	270K		RR-31	
R10	270K		RR-31	
R11	18meg		RR-140	
R12	270K		RR-31	
R13	270K		RR-31	
R14	270K		RR-31	
R15	18meg		RR-140	
R16	270K		RR-31	
R17	270K		RR-31	
R18	270K		RR-31	
R19	18meg		RR-140	
R20	270K		RR-31	
R21	270K		RR-31	
R22	270K		RR-31	
R23	100K		RR-27	
R24	330K		RR-32	
R25	330K		RR-32	
R26	330K		RR-32	
R27	330K		RR-32	
R28	10meg		RR-46	
R29	270K		RR-31	
R30	2.7meg		RR-41	
R31	270K		RR-31	
R32	560K		RR-34	
R33	2.7meg		RR-41	
R34	100K		RR-27	
R35	100K	1	RR-153	
R36	560K		RR-34	
R37	680K		RR-35	
R38	180K		RR-29	
R39	1800Ω		RR-9	
R40	220Ω		RR-2	
R41	4700Ω		RR-14	
R42	560K		RR-34	
R43	100K	1	RR-153	
R44	2200Ω		RR-10	
R45	56K		RR-25	
R46	180K		RR-29	
R47	18K		RR-20	
R48	220Ω		RR-2	
R49	125Ω	10	RR-150	
R50	56K		RR-25	
R51	220Ω		RR-2	
R52	56K		RR-25	
R53	180K		RR-29	
R54	220Ω		RR-2	
R55	56K		RR-25	
R56	220Ω		RR-2	
R57	1500Ω	10	RR-101	
R58	7500Ω	25	RR-152	
R59	100K		RR-27	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.9A	700VCT @ .260A	5V @ 6A	6.3VCT @ 8A	TR-139					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	1500Ω CT	500Ω Tap @ 250Ω 70V,16Ω 8Ω & 4Ω	TR-138						

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.011A	2000Ω	80 Hy.	TC-5					

FUSE

ITEM No.	TYPE	RATING	REPLACEMENT DATA NEWCOMB PART No. FUSE	NEWCOMB PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 250V	FA-6		312003. (3AG 3A 250V)	341001	AGC3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	NEWCOMB PART No.	NOTES
M2	Pilot Lamp		#51
M3	Pilot Lamp		#51
M4	Switch	SY-81	Power On-Off (Rotary Type SPST)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KA-15-K	Seven used.

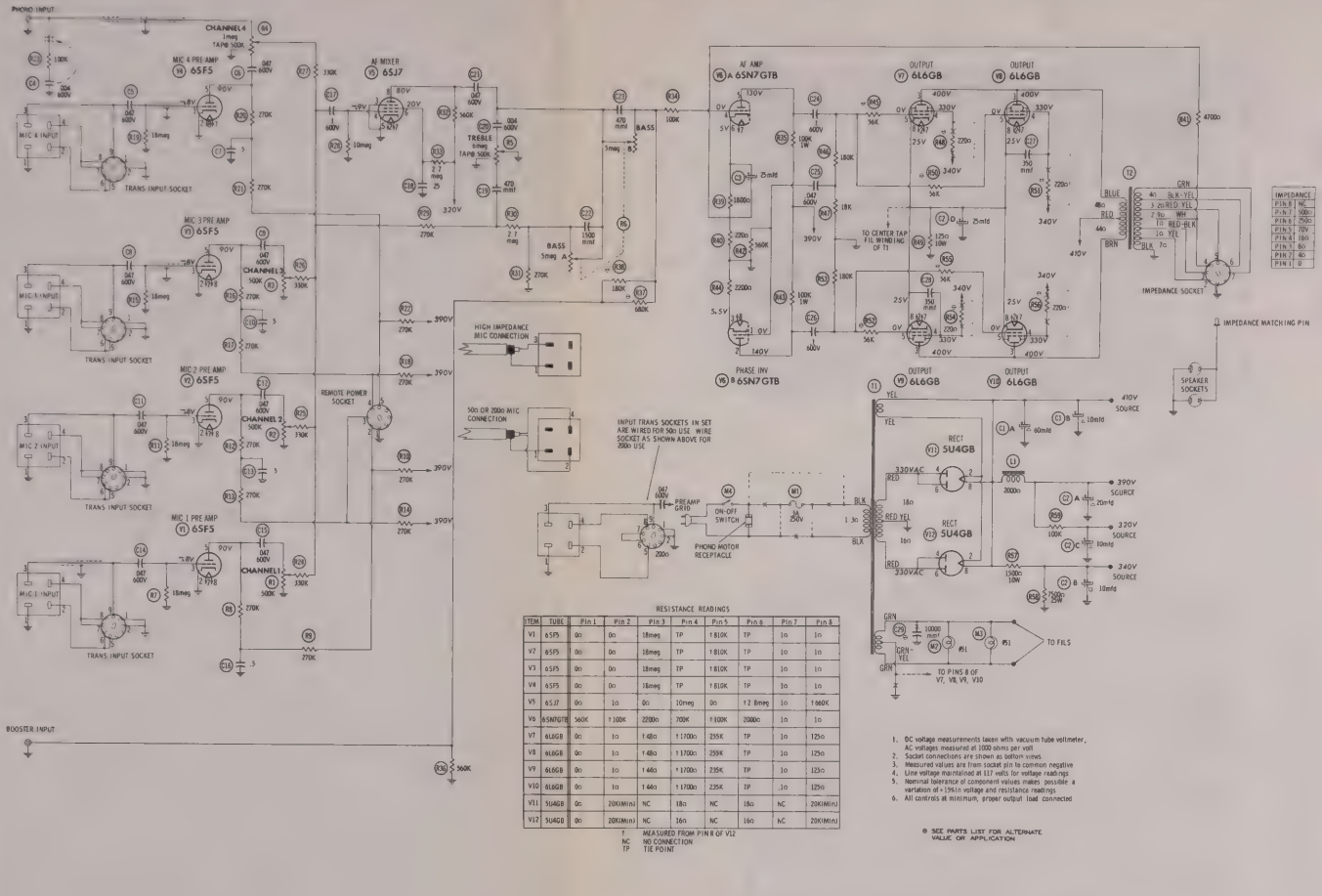
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SF5	0Ω	0Ω	18meg	TP	↑810K	TP	1Ω	1Ω
V2	6SF5	0Ω	0Ω	18meg	TP	↑810K	TP	1Ω	1Ω
V3	6SF5	0Ω	0Ω	18meg	TP	↑810K	TP	1Ω	1Ω
V4	6SF5	0Ω	0Ω	18meg	TP	↑810K	TP	1Ω	1Ω
V5	6SJ7	0Ω	1Ω	0Ω	10meg	0Ω	12.8meg	1Ω	↑860K
V6	6SN7GTB	560K	↑100K	2200Ω	700K	↑100K	2000Ω	1Ω	1Ω
V7	6L6GB	0Ω	1Ω	↑48Ω	↑1700Ω	295K	TP	1Ω	125Ω
V8	6L6GB	0Ω	1Ω	↑48Ω	↑1700Ω	295K	TP	1Ω	125Ω
V9	6L6GB	0Ω	1Ω	↑44Ω	↑1700Ω	295K	TP	1Ω	123Ω
V10	6L6GB	0Ω	1Ω	↑44Ω	↑1700Ω	295K	TP	1Ω	125Ω
V11	5U4GB	0Ω	20K(Min)	NC	18Ω	NC	18Ω	hC	20K(Min)
V12	5U4GB	0Ω	20K(Min)	NC	16Ω	NC	16Ω	hC	20K(Min)

↑ MEASURED FROM PIN 8 OF V12
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS RP-208-2, RP-208-3, RP-208-4, RP-208-5

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RCA VICTOR MODELS RP-208-2, RP-208-3, RP-208-4, RP-208-5

RCA VICTOR MODELS RP-208-2, RP-208-3, RP-208-4, RP-208-5

GENERAL INFORMATION

The RP-208 Series Record Changers are two speed mechanisms and are designed to play manually a single 33 1/3 r.p.m., 10 inch or 12 inch records or a stack of 45 r.p.m., 7 inch records, in automatic sequence.

An Adapter is provided for playing 45 r.p.m. records.

The tripping method used is the velocity type in which the trip lever causes a trip pawl to engage a projection on the turntable hub and start the mechanism into cycle. A point will be reached where a constant-diameter trip is effected if the record being played causes the pick-up arm to move inward at a constant rate without acceleration.

When the changer is not in use, the speed selector lever should be placed in the "N" position.

Turntable Speed	33 1/3 or 45 r.p.m.
Record Capacity	Up to fifteen 7" 45r.p.m.
	One 10" 33 1/3 r.p.m.
	One 12" 33 1/3 r.p.m.

Manufactured By:

Radio Corporation Of America
RCA Victor And "Victrola" Division
Camden 8, New Jersey

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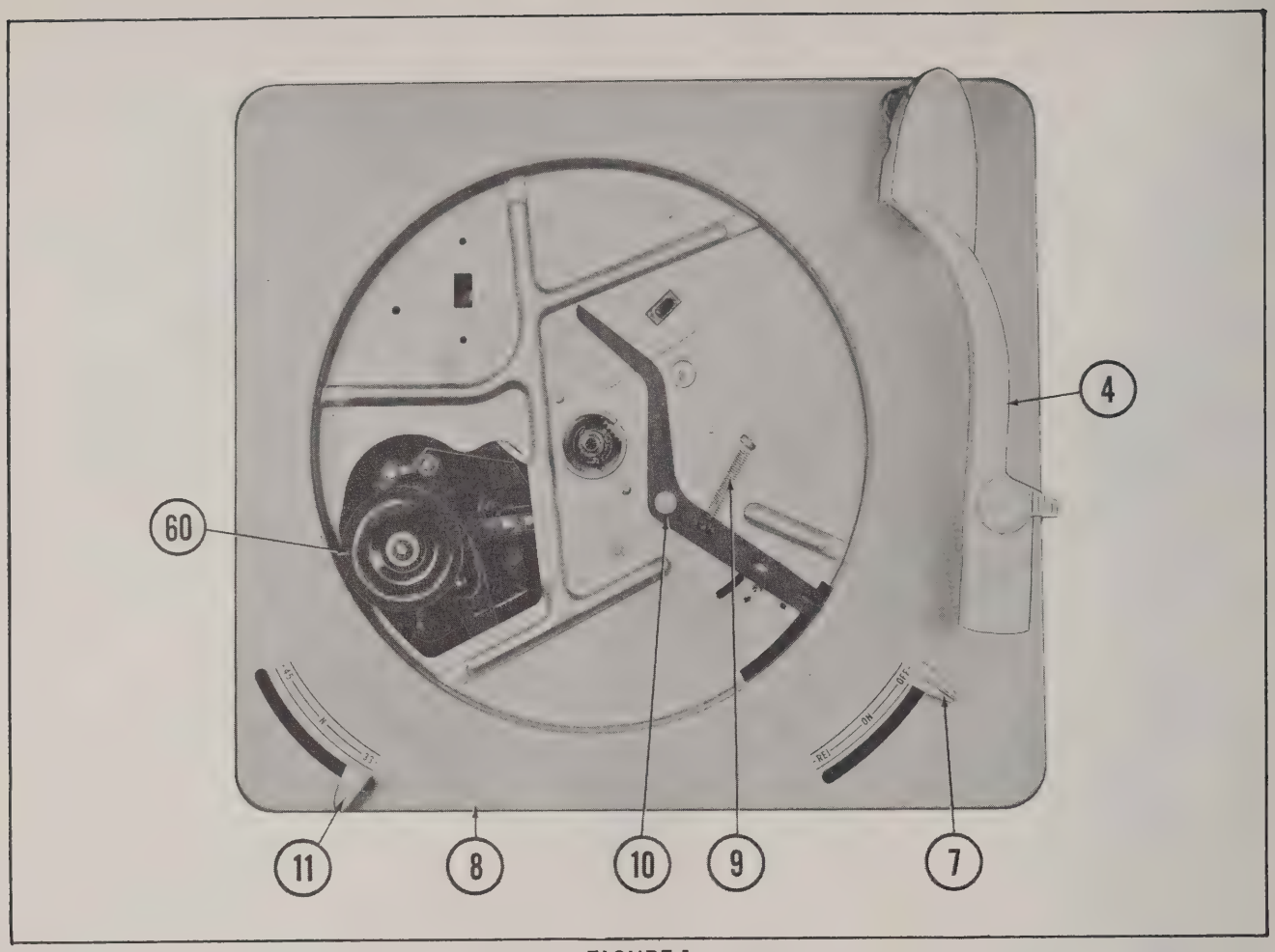

FIGURE 1

SPECIFICATIONS

Model RP-208-2
115 volts, 60 cycle, 2 pole motor.
Stock No. 79791 standard output ceramic pick-up equipped with synthetic sapphire stylus.
Used in Models 9-ED-2 and 9-JD-1.
Secured to cabinet from bottom of baseplate.

Model RP-208-3
115 volts, 60 cycle, 2 pole motor.
Stock No. 79791 standard output ceramic pick-up equipped with synthetic sapphire stylus.
Used in Model 9-ED-32.
Secured to cabinet from top of baseplate.

Model RP-208-4
115 volts, 60 cycle, 2 pole motor.
Stock No. 103330 high output crystal pick-up equipped with synthetic sapphire stylus.
Used in Model 9-ED-31.
Secured to cabinet from top of baseplate.

Model RP-208-5
115 volts, 60 cycle, 2 pole motor.
Stock No. 103330 high output crystal pick-up equipped with synthetic sapphire stylus.
Used in Model 9-ED-1.
Secured to cabinet from bottom of baseplate.

OPERATING INSTRUCTIONS

1. Release tone arm from tone arm rest.

2. Place up to fifteen 7 in. 45r.p.m. records on the 45r.p.m. adaptor or one 10 in. or 12 in. 33 1/3 r.p.m. on the 45r.p.m. operating shaft.

3. Turn the speed control to the speed which corresponds to the type records to be played, 33 1/3 or 45r.p.m.

4. Push the "On-Off-Reject" control to the left to "Reject" and permitting the control to return to the "On" position, the automatic operation of the mechanism is started.

5. After the last record has been played and starts to repeat itself, pick the tone arm up and place on its rest.

6. To turn the changer off, push the "On-Off-Reject" lever to the "Off" position.

7. To load or remove records, lift or lower the records with a straight vertical motion.

CHANGE CYCLE

Cycling starts when the cycling gear (27) rotates the stud (27A), which is mounted on the bottom of the gear and extends through and rides in the elongated slot in the cycling slide (20), pushing the slide outward away from the spindle.

When the slide starts on its outward movement, the pick-up arm lift rod (6) rides up the inclined

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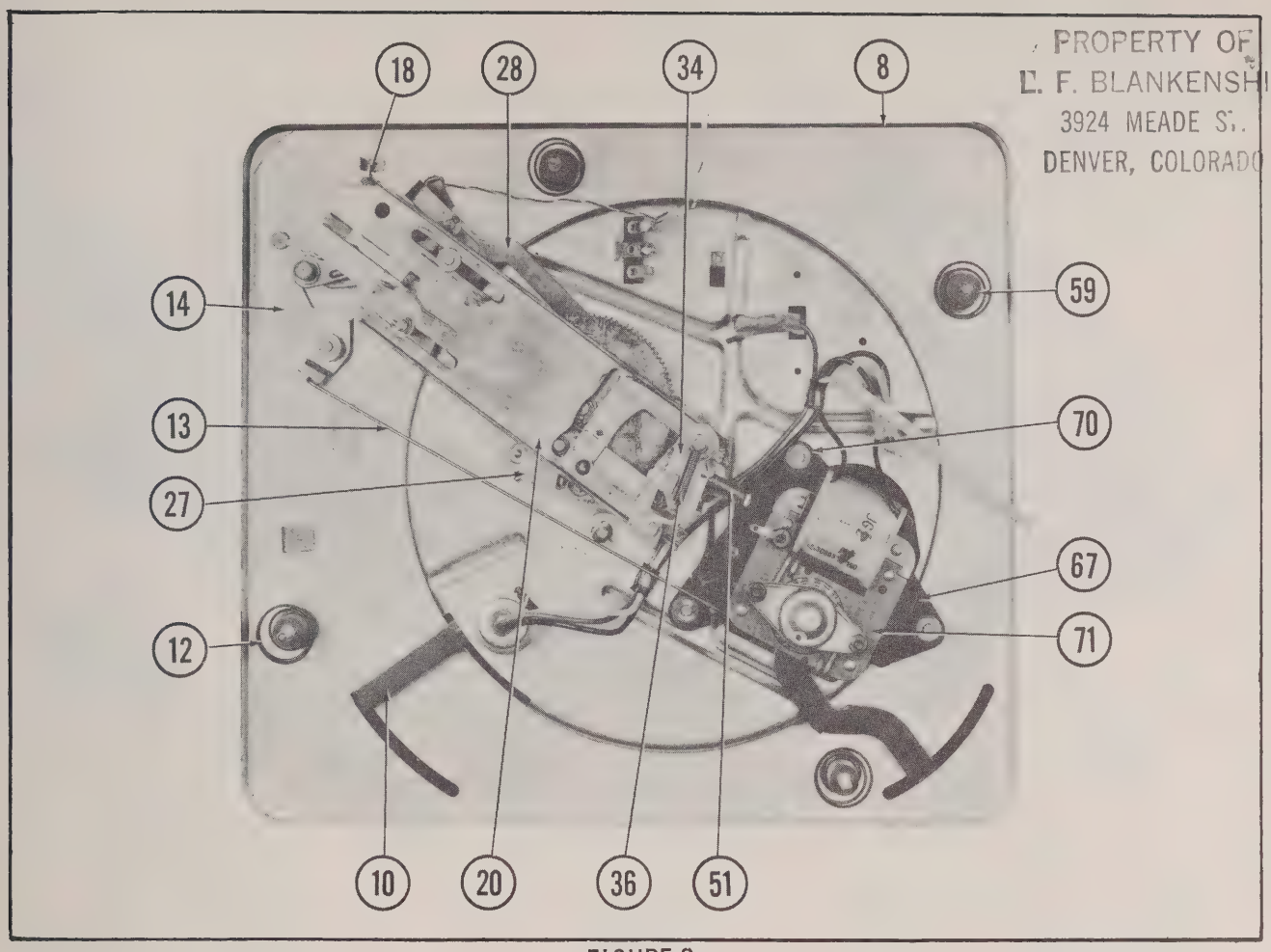

FIGURE 2

portion of the lance forcing the lift rod upward against the height adjustment screw (97) causing the pick-up arm to rise and move out.

About the same time, the cycling gear has rotated enough for the trip pawl to slide over the edge of a small piece of metal extending from the bottom of the baseplate and resets itself to prevent the mechanism from tripping continuously.

Any more movement of the slide (20) results in a contact between a horizontal projection on the slide (27) and the bottom stud (19A) on the pick-up arm lever (19) thereby rotating the lever and starting the pick-up arm on its outward movement. At this time, the upper stud (19B) slides over the latch (15A) and locks the pick-up arm return lever (15) to the pick-up arm lever (19). This locked condition causes both the pick-up arm lever and the pick-up arm return lever to rotate as a unit in opposition to the force applied by the pick-up arm return spring (18). The slide continues outward turning the pick-up arm lever. The pick-up arm follows since it is connected to the pick-up arm lever through the pick-up arm lever shaft.

The pick-up arm return lever (15) is pushed against tension of the pick-up arm return spring (18) when the slide reaches the extreme end of its outward travel. This condition produces a stabilizing action for the pick-up arm as the record drops to the turntable. The pick-up arm lever (19) remains latched to the pick-up arm return lever (15) as the pick-up moves in to set down on the record.

The pick-up arm lever and the pick-up arm return lever, which is attached to it, follow the slide when the slide starts its inward travel.

Any more movement of the slide pushes the pick-up arm return lever (15) against the landing selector arm (14). The pick-up arm lever is still attached to the return lever at this time and the pick-up arm is held in the desired position for setting down on the record.

The perpendicular tab on the slide contacts and pushes the spindle operating arm (31) against the tension of spring (51) after the slide starts its outward travel.

Any more movement of the slide permits the spindle operating arm (34) to pivot. As the spindle operating arm pivots, the stud which is mounted on the bottom of the lever and extends through and rides in the elongated slot in the spindle operating arm, results in the rotation of the lever. This caused both the lever and the spindle operating shaft (50), which is coupled to the separator shaft (83), to rotate as a unit.

The separator shelves and knives are coupled together in such a manner that the flattened end of the separator shaft (83) pushed the knives out which in turn pulls the opposite shelves in.

The separator knives mounted above the shelves move out and separate the lower record from the stack and support the remaining records while the lower record drops to the turntable as the shelves recede.

The pick-up lands on the record during the return travel of the cycling slide, the tension of the pick-up arm return spring (18) caused the bottom stud of the

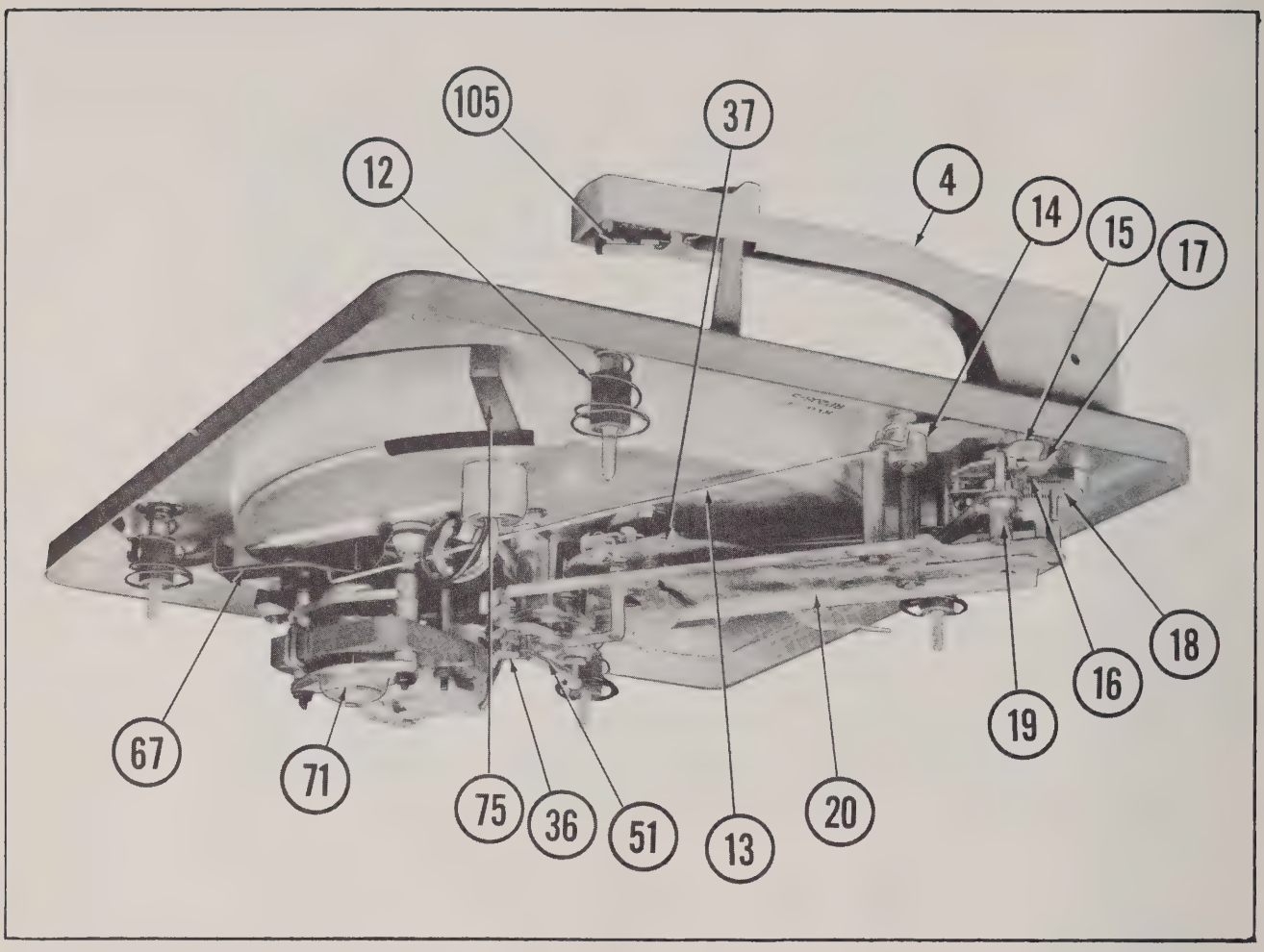

FIGURE 3

pick-up arm lever (19) to remain in contact with and follow the cycling slide inward. This condition permits the pick-up arm lever (19), which is attached to the pick-up arm return lever (15), to direct the movement of the pick-up arm inward.

The pick-up arm is pushed inward by the pick-up arm lever (19) until the pick-up arm return lever (15) is blocked by the landing selector arm (14), which contacts the stud on the return lever. The position of the landing selector arm (14) governs the set down position of the pick-up.

When the pick-up is directly above the set down position, the cycling slide has returned enough for the pick-up arm lift rod (6) to ride down the inclined portion of the lance in the slide and the pick-up stylus sets on the starting grooves of the record.

The stud located on the extreme end of the cycling slide contacts the end of the actuating lever (17), an instant before the pick-up sets on the record, unlatching the pick-up arm lever (19) from the pick-up arm return lever (15). This allows the pick-up arm to become free in its movement at the time the stylus contacts the record. At this time the cycling slide has not quite completed its return travel.

Any more travel of the slide results in the stud carrying the actuating lever (17) to move sufficiently so that the pick-up arm return lever (15) is pulled away from the set down selector arm (14).

The remaining short travel of the slide moves the pick-up arm return lever (15) and latch away from any contact with the stud on the pick-up arm lever (19). This condition is maintained throughout the playing cycle.

A stud located on the top of the cycling gear contacts and pulls the trip slide (20) back to the position for the next tripping as the cycling gear is completing its cycle.

After the cycling gear has rotated enough so the teeth in the gear on the turntable hub run off the last tooth at the cut-away section of the gear, the change cycle is completed. The stud riding in the elongated slot in the cycling slide drops into the stop notch and the cycling gear stops rotating at this time.

The pick-up arm lever (19) contacts the trip slide (20) and pushes the slide outward away from the center post as the record plays and the pick-up moves inward. The other end of the trip slide contacts and moves the trip pawl which moves the trip engagement pawl through a friction clutch arrangement.

The pick-up moves in at a constant rate of speed while the record continues to play until the sloped side of the engagement pawl lightly contacts the projection on the turntable hub. The engagement pawl is pushed away with each rotation of the turntable when this contact occurs, providing the pawl has not moved in so far that the contact is made on the leading edge. The projection on the turntable hub makes contact on the side of the engagement pawl, if the inward movement of the pick-up should move rapidly, as it does when the stylus leaves the recorded section and enters the fast finishing groove of the record; the trip engagement pawl moves in too far before the turntable has made a complete revolution. This contact rotates the cycling gear enough to have the teeth of the turntable hub and the cycling gear engage to start a change cycle. This

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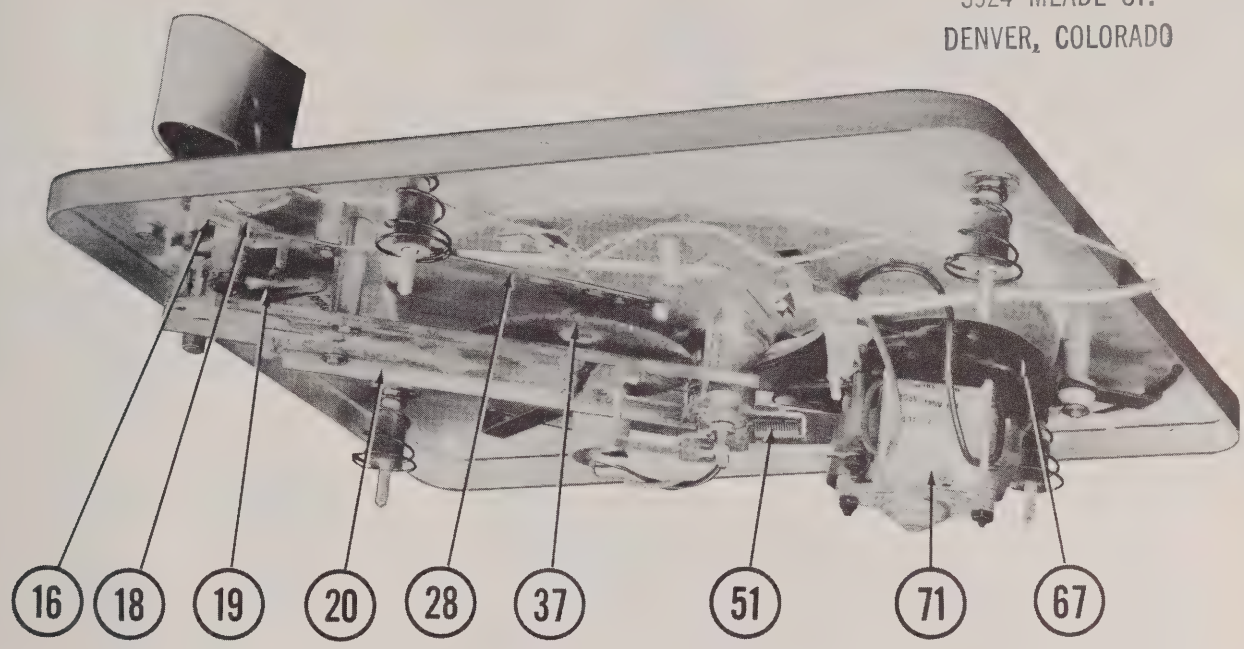

FIGURE 4

tripping procedure is referred to as an acceleration trip. If the pick-up moves inward at a constant rate, there is a limit at which the edge of the engagement pawl will make a firm contact with the projection on the turntable hub and a constant diameter trip is effected.

The tab, on the bottom of the baseplate, contacts and resets the trip pawl so the changer will not recycle without playing the next record as the cycling gear is carrying the mechanism through cycle.

The pick-up set down position is determined by contact of the outer stud on the pick-up arm return lever (15) with the set down selector arm (14).

The set down position corresponds to the position of the set down selector arm (14) which is positioned by the speed selector lever through the set down selector control rod (13).

The speed selector control lever selects the record speed and also the pick-up set down position. When the speed control is set for "45" the pick-up will set down for 7 inch records; when set to "33" the pick-up will set down for 12 inch records. If 10 inch 33 1/3 r.p.m. records are being played, it is necessary to manually replace the pick-up on the record.

ADJUSTMENTS

Needle Set Down

Place a 7" record on the turntable, push the speed control lever to the "45" position and the "On-Off-Reject" control to "Reject" position. Rotate the turntable by hand until the pick-up is just ready to set down on the record. Then adjust the Split Nut (104) so the pick-up sets down half way between the outer edge and the starting groove.

When this adjustment is correct for a 7" 45 r.p.m. record, the set down position for a 12" 33 1/3 r.p.m. record automatically maintained.

It is necessary to manually place the pick-up on the record when playing 10" 33 1/3 r.p.m. records.

Pick-up Arm Height Adjustment

The pick-up arm height is adjusted by the height adjustment screw (97). This adjustment is made in the following way:

1. Push control lever (10) to reject position.
2. Rotate turntable by hand until the pick-up arm has risen to its maximum height.
3. Adjust hex head height adjusting screw (97) so the tip of the stylus is 1 1/8 inch above the turntable.

STYLUS REPLACEMENT

Crystal Pick-up

The stylus is held in position by a retaining screw. To remove, loosen the retaining screw, and push stylus toward front of pick-up and lift out with a pair of tweezers and to replace, slide the back end of stylus under the retaining screw head and tighten.

Ceramic Pick-up

The stylus is held in place by a spring clamp. To remove the stylus, pull front of stylus mounting clip outward away from pick-up and to replace, hook end of stylus mounting clip into hole at rear of pick-up, push forward and toward pick-up body. Make sure the shank of stylus rests in the U-shaped saddle.

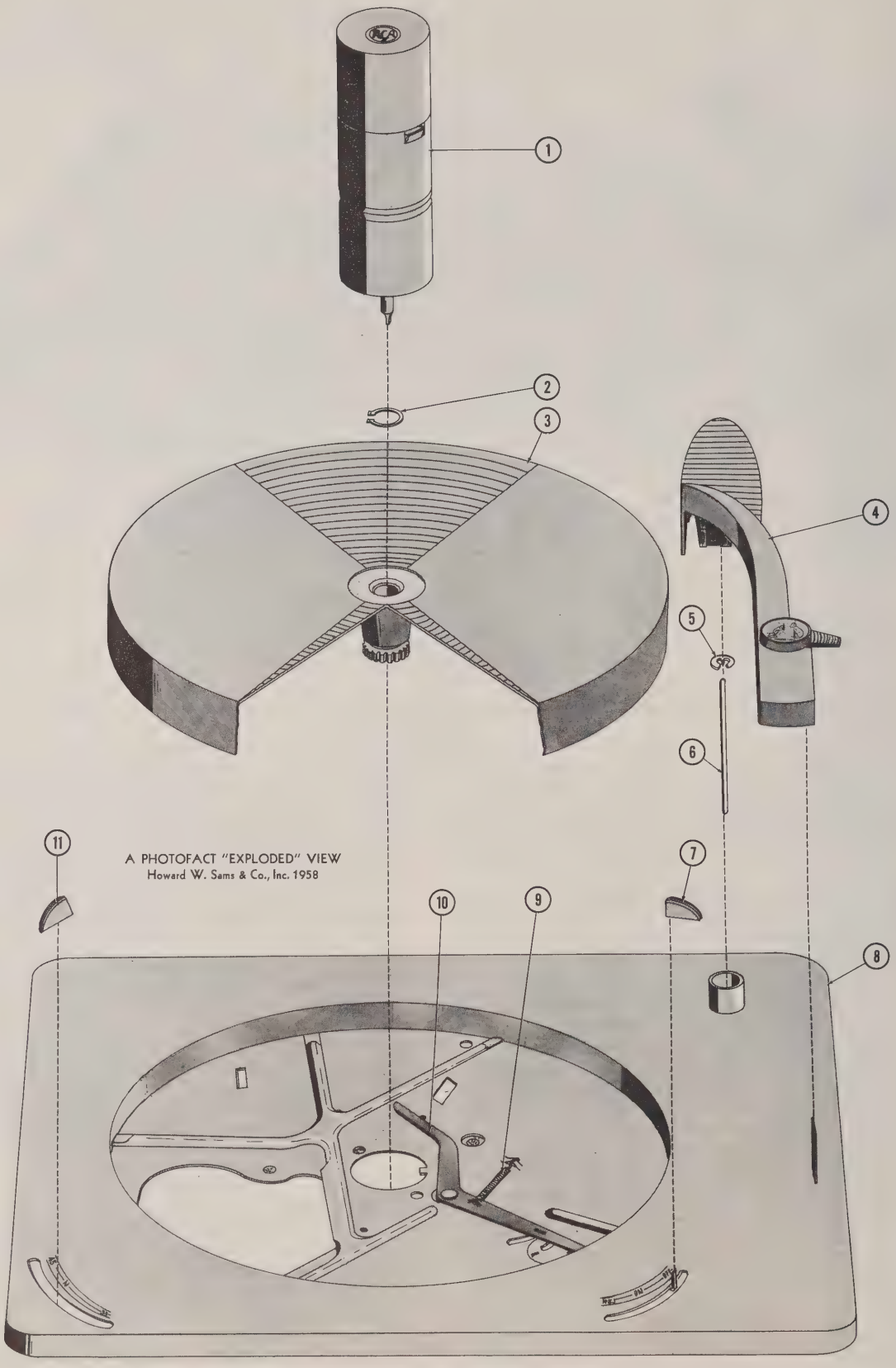

FIGURE 5A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

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DENVER, COLORADO

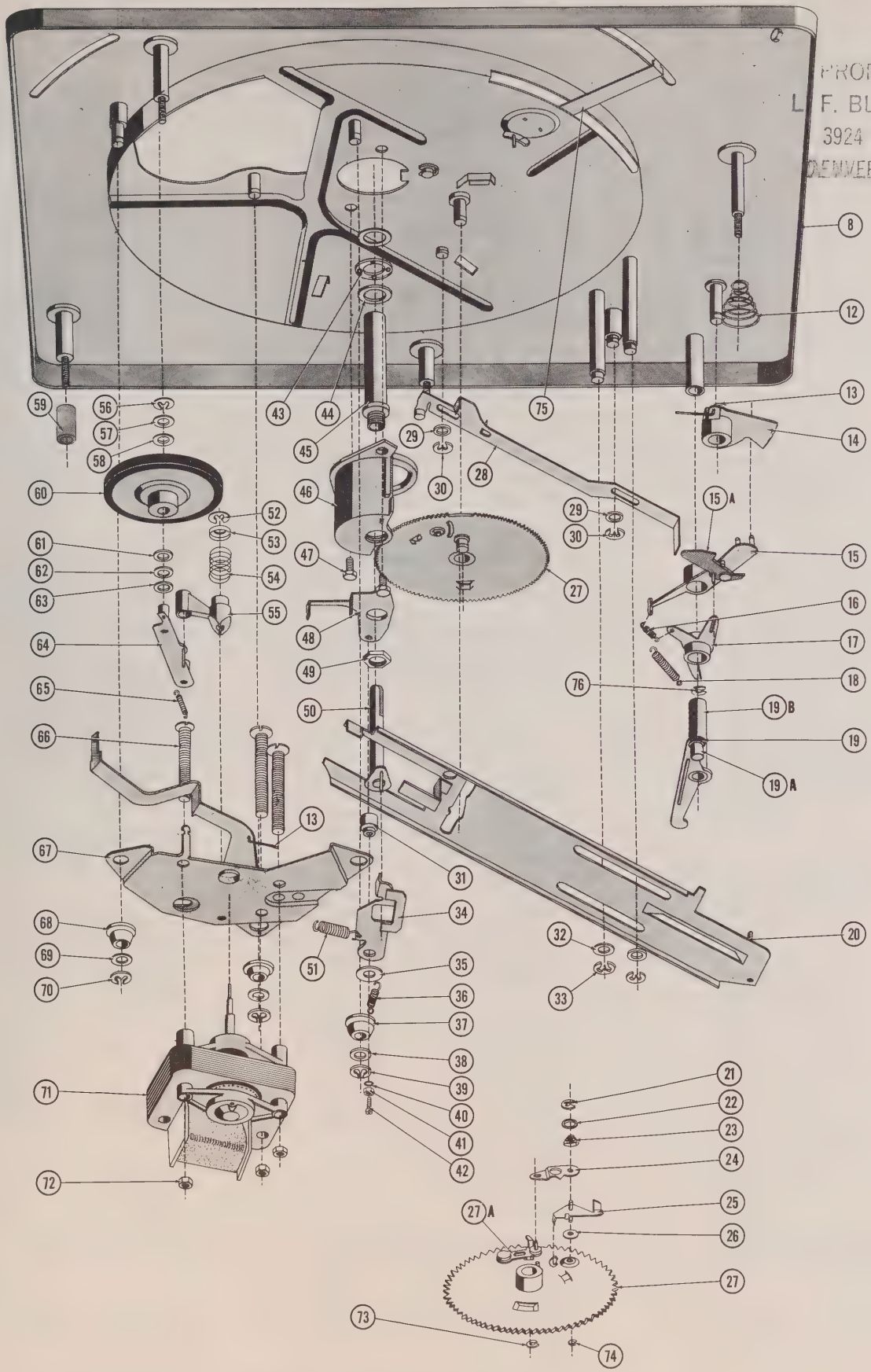

FIGURE 5B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART

Sympton	Cause	Remedy
Reject control does not function properly.	1. Trip Pawl intermediate lever (25) may be too loose or tab may be bent.	1. Tighten or replace Trip Pawl intermediate lever and straighten tab.
	2. Bearing (27A) may be too tight causing binding.	2. Free bearing and lubricate.
	3. Lance on (28) may be bent down.	3. Straighten
	4. Trip Pawl (25) may be on opposite side of trip slide (20)	4. Put Trip Pawl in correct position.
	5. The end of Trip Pawl (25) extending through gear (27) may be bent preventing sufficient travel for engagement with notch.	5. Straighten or replace Trip Pawl.
Mechanism Jams.	1. Defective teeth in turntable hub (3) or cycling gear (27).	1. Replace
	2. Slot of Cycling Slide Ass'y. (20) bent or mounting studs tight.	2. Straighten or replace Cycling Slide Ass'y. or free ass'y. on studs and lubricate.
Erratic Speed Control.	1. Rod (13) may be bent or speed control may be improperly set.	1. Straighten or replace rod and make sure speed control is in the correct setting.
Continuous tripping	1. End of Trip Pawl (25) may not make contact.	1. Bend to Correct position or replace.
	2. End of Trip Slide (28) may be bent preventing resetting of Trip Slide.	2. Straighten the Trip Slide or replace.
	3. End of Engagement Pawl (27A) may be bent out causing end to engage notch on turntable hub.	3. Make sure the Engagement Pawl is not bent so it will not engage the notch on turntable hub.
	4. Control Lever (10) may be caught on edge.	4. Free the control lever.
	5. Trip Pawl (25) may not contact tab and reset Engagement Pawl (27A).	5. Replace Trip Pawl or straighten tab.
	6. Stud on Cycling Gear (27) may be loose.	6. Replace Cycling Gear.
Pick-up fails to set down properly.	1. Pick-up Arm Return Lever Spring (18) may be loose or missing	1. Replace Spring.
	2. Spring (16) loose or missing.	2. Replace Spring.
	3. Bend Stud (19B) may fail to latch Pick-up Arm and Pick-up Arm Return Lever (17) together.	3. Straighten stud or replace Pick-up Arm Return Lever.

Sympton	Cause	Remedy
	4. Bind in shaft may prevent Pick-up Arm Return Lever from pushing Pick-up Arm in to set down.	4. Free shaft or replace if necessary.
	5. Pick-up Arm Return Lever (17) may not contact set down selector stud properly.	5. If stud is worn replace Pick-up Return Lever (17) and if bent, straighten.
Pick-up sets down in 7" position when playing 12" records.	1. Speed control improperly set.	1. Set Speed control in correct position for records being played.
	2. Control Rod (13) may be bent.	2. Straighten Rod.
Fails to trip automatically.	1. Trip Slide Lever (28) may bind on studs.	1. Lubricate Trip Slide Lever or if bent out of shape replace.
	2. The turned down end of Trip Slide Lever (28) may be bent out too far.	2. Bend the end down so it will make an angle of 90 degrees.
	3. Binding in pivot shaft may cause pick-up to skip grooves and not play the record.	3. If pivot shaft is burred, remove burrs. Check to see if shaft is straight.
	4. Clutch (21 thur 26) may be loose.	4. Tighten or replace.
	5. Leading edge of Engagement Pawl (27A) may be rounded off.	5. Replace cycling Gear (27).
	6. End of Engagement Pawl (27A) may be bent back preventing sufficient travel to engage notch on turntable hub.	6. Bend Engagement Pawl to correct position.
	7. Trip Pawl (25) may slide to the outer side of tab on baseplate.	7. Place Trip Pawl on the inter side of tab on baseplate.
Records fail to separate properly.	1. Return spring (78) may be weak.	1. Replace spring.
	2. Knife (79) and shelf (81) ass'y. may be binding.	2. Free the ass'y. by cleaning or replace.
	3. Tension of separator springs (82) may be insufficient.	3. Replace springs.
	4. Separator shaft (83) may be bent.	4. Straighten shaft or replace.
	5. The spindle may not be on tight.	5. Make sure spindle is positioned correctly in the 45 r.p.m. spindle operating shaft (50).
	6. Spring (51) may be weak or missing.	6. Replace spring.

TROUBLE CHART-CON'T

Sympton	Cause	Remedy
Wow or turntable speed variation.	1. Motor mounting grommets may be resilience causing unequal suspension.	1. Replace grommets.
	2. Detent ball on slide may be missing.	2. Replace ball.
	3. Rod (13) may be bent.	3. Straighten rod or replace.
	4. Spring (65) may be weak.	4. Replace spring.
	5. There may be grease on Idler Wheel (60) or inter rim of turntable (3).	5. Clean grease off the Idler Wheel or inter rim of turntable with solvent.
	6. Tire on Idler Wheel (60) out of round.	6. Replace Idler Wheel.
	7. Bearing race (43) may be defective.	7. Replace.
	8. Turntable may bind on spindle shaft (50).	8. Check spindle shaft and replace if binding.
Pick-up skips grooves.	1. Slide (28) may be bent and cause binding.	1. Straighten or replace slide.
	2. Slide may be bent or worn and binding on studs.	2. Straighten slide or replace.
	3. There may be burrs on slide.	3. Remove burrs.
	4. Too much friction in trip clutch (21 thru 26).	4. Tighten or replace.
	5. Lift rod (6) may bind.	5. Check lift rod to see if it is straight or worn
	6. Stylus may be worn, broken, or improperly selected.	6. If stylus is worn, broken, or improperly selected, replace stylus
	7. Horizontal bearing (93) may bind.	7. Replace worn bearing.
	8. If Pick-up skips grooves on first record on turntable, the height adjustment screw (97) may be improperly set.	8. Adjust height adjusting screw.
	9. Pick-up Arm Mounting collar (102) may bind.	9. Make sure collar has sufficient clearness to move freely.
Premature tripping.	1. Grease gummed on clutch (21 thur 26).	1. Clean clutch and lubricate.
	2. The ends of trip slide lever (28) may be bent.	2. Bend ends back to original position or replace slide.
	3. Engagement Pawl (27A) may have rough or worn edge.	3. Replace.

MECHANICAL PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	104271	Centerpost Ass'y., 45R. P. M. Complete
2	78654	Turntable Support Bearing Retaining Ring
3	104270	Turntable
4	104276	Pick-up Arm
5	35969	"C Washer For Pick-up Arm Lever
6	104257	Pick-up Arm Lift Rod
7	104272	"On-Off-Rej." Knob
8	104267	Baseplate, Models RP-208-3 And RP-208-4
	105414	Baseplate, Models RP-208-2 And RP-208-5
9	104274	"On-Off-Rej." Return Spring
10	104263	"On-Off-Rej." Control Lever
11	104272	Speed Shift Control Knob
12		Mounting Spring
13	104281	Selector Arm Control Rod For 7" And 12" Landing
14	104277	7" And 12" Landing Selector Arm
15	104282	Pick-up Arm Return Lever Ass'y.
16	78699	Pick-up Arm Return Lever Actuating Lever Spring
17	78724	Actuating Lever Ass'y.
18	104273	Pick-up Arm Return Lever Srping
19	105480	Pick-up Arm Lever
20	104265	Cycling Slide Ass'y.
21	78651	"C" Washer
22	79240	Flat Washer
23	78727	Trip Pawl Pressure Spring
24	78725	Trip Pawl Actuating Lever
25	78726	Trip Pawl Intermediate Lever
26		Washer
27	78691	Cycling Gear
28	78688	Trip Slide Lever
29	78719	Flat Washer (.310" O.D. x .190" I.D. x .010" Thk.)
30	33726	"C" Retaining Washer
31		45R. P. M. Spindle Operating Arm Bushing
32	78719	Flat Washer For Mounting Trip Slide Lever .310 O.D. x .190" I.D. x .010" Thk.
33	33726	"C" Washer
34	104255	45R. P. M. Spindle Operating Arm
35	79092	Flat Washer For 45R. P. M. Spindle Operating Arm
36		Spring
37	105421	Drive Ass'y. Mounting Grommet
38	75749	Drive Ass'y. Mounting Washer
39	33726	Drive Ass'y. Mounting "C" Washer, .406" O.D. x .125" I. D. (3 Used)
40		#6 Lockwasher
41		Locknut
42		Screw, #6-32 x 7/16" Large H.H.
43	78660	Thrust Bearing For Turntable
44	78720	Flat Washer For Turntable Thrust Bearing (2 Used)
45	104264	Turntable Support Bearing
46	105504	Turntable Support Bracket
47		#8 x 5/16 H. H. S. T. Screw
48	104254	45R. P. M. Sprindle Operating Shaft Mounting Bracket
49	100342	1/2"-32 Retaining Nut For Bearing
50	104279	45R. P. M. Spindle Operating Shaft
51	104275	Return Spring For 45R. P. M. Spindle Operating Arm
52	102591	"C" Washer
53	102595	Pivot Shaft Spring Retaining Washer
54	105422	Idler Wheel Pivot Shaft Spring
55	105423	Speed Change And Idler Wheel Pivot Lever
56	102591	"C" Washer
57		Fiber Spacer Washer .375" O.D. x .191" I. D. x .015" Thk.
58		Fiber Spacer Washer .375" O. D. x .191" I. D. x .015" Thk.
59		Spacer
60	105419	Idler Wheel
61		Fiber Spacer Washer
62		Fiber Spacer Washer
63		Washer
64	105420	Idler Wheel Mounting Arm
65	78374	Idler Wheel Arm Spring
66		#6-32 x 1 3/4" Ft. Head Retaining And Mounting Screw
67	105426	Drive Assembly Mounting Plate Complete With Speed Selector Arm
68	105421	Drive Assembly Mounting Grommet
69	75749	Flat Washer For Retaining Motor Assembly
70	33726	"C" Retaining Washer .406" O.D. x .125" I. D.
71	105455	Motor
72		#6-32 Nut
73	78651	"C" Washer
74	35969	"C" Washer
75	76301	"On-Off" Switch-SPST
76	78653	Retaining Ring For Pick-up Arm Return Actuating Lever
77	104268	Red Polystyrene Nose Cap, All Models Except Early Production Of RP-208-3
	101684	Antique Nose Cap, Early Production Of RP-208-3
78	74862	Separator Knife Return Spring
79	74864	Record Separator Knife
80	73370	"C" Type Retaining Washer For Separator Shaft
81	74865	Record Support Shelves
82	75756	Record Support Shelf Spring
83	104253	Spindle Separator Shaft
84	104284	Retaining Ring For Separator Shaft
85	104269	Center Spindle Body And Shaft
86		#6 Flat Washer
87	75758	Nose Cap Retaining Screw
88	104278	Spacer Washer .625" O. D. x .330" I. S. x .005" Thk.
89	104261	Lower Spindle Body
90	105503	Rotor Lift Spring
91	104262	Rotor Lift Adaptor-Die Cast
92	104256	Retaining Ring For Center Body Shaft
93	78742	Pivot Shaft
94	102474	Bearing For Pivot Shaft
95		#4 x 1/4" Fil. Hd. Screw (3 Used)
96	78738	Spring For Height Adjustment Screw
97	78740	Hex Head #6-32 Height Adjustment Screw
98	104614	Counter-balance Spring
99	104260	Mounting Bracket For Pick-up Arm
100	100999	Landing Adjustment Screw Spring
101		Flat Metal Washers (2Used)

Ref. No.	Part No.	DESCRIPTION	Ref. No.	Part No.	DESCRIPTION
102	78732	Pick-up Arm Mounting Collar	109	103330	Crystal Pick-up, Models RP-208-4 And RP-208-5
103	79245	#10-32 Set Screw			
104	101270	Split Nut	110	103331	Stylus For Pick-up No. 103330
105	79791	Ceramic Pick-up, Models RP-208-2 And RP-208-3	111	104259	Pick-up Cable With Terminals For RP-208-4 And RP-208-5
106	79849	Stylus For Pick-up No. 79791	112	104258	Pick-up Cable With Terminals For RP-208-2 And RP-208-3
107		#0-80 x 5/32" Lg. Screw			
108		#4 x 1/4" Lg. Fil. Head Screw			

NOTE: Motor Assembly Parts shown are for Motor Assembly Stamped 973024-1 190

Some Changers use Motor Assembly Stamp 973023-1 107

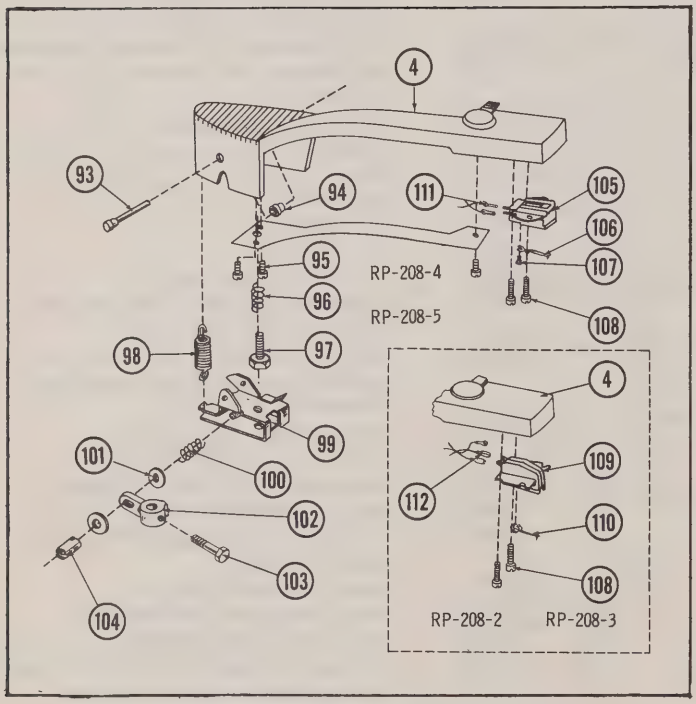

FIGURE 6. TONE ARM ASSEMBLY

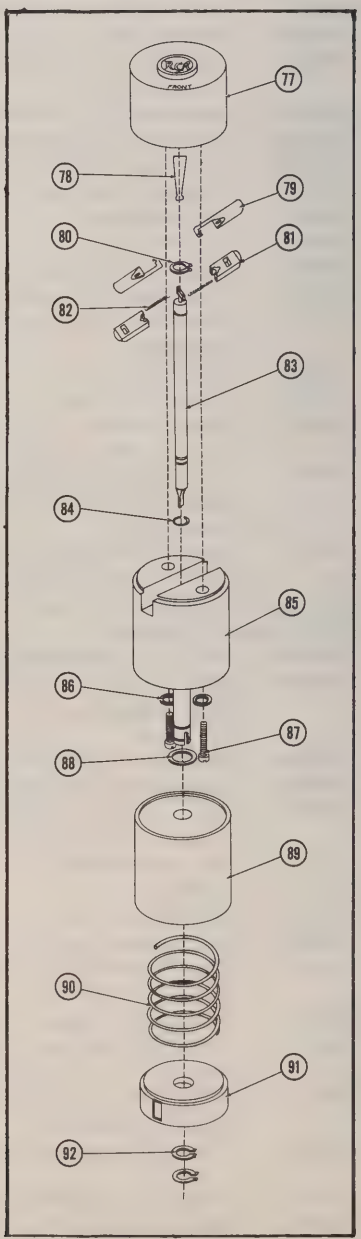

FIGURE 7. 45 R.P.M. SPINDLE

PHOTOFACT* Folder
*TRADE MARK

SILVERTONE MODELS 8009, 8010, 8011, 8012 (Ch. 132.42800)

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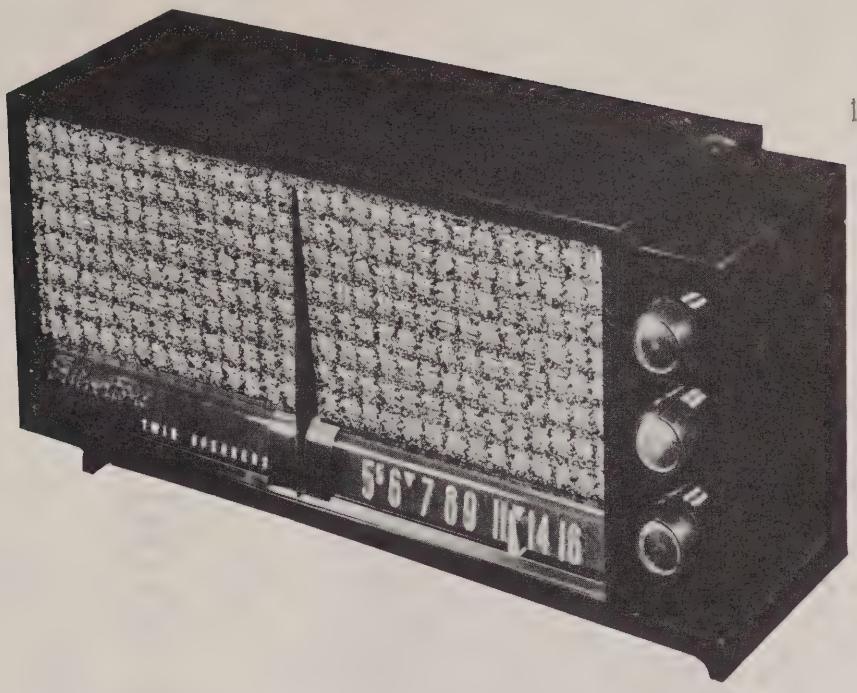
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS 8009, 8010, 8011, 8012 (Ch. 132.42800)



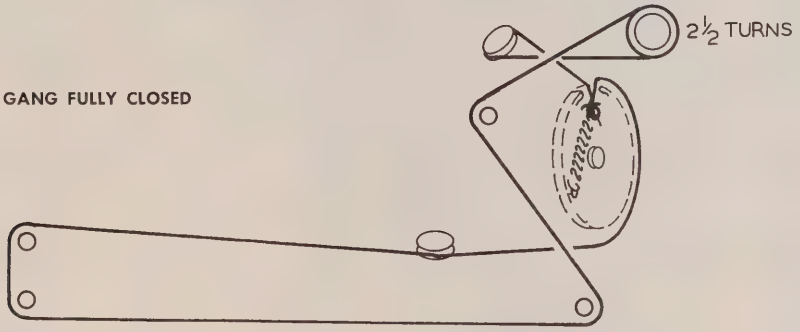
SILVERTONE MODELS 8009, 8010, 8011, 8012 (Ch. 132.42800)

TRADE NAME	Silvertone Models 8009, 8010, 8012 (Ch. 132.42800)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det. - AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.28 Amp. @ 117 Volts AC (28 Watts)
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H374

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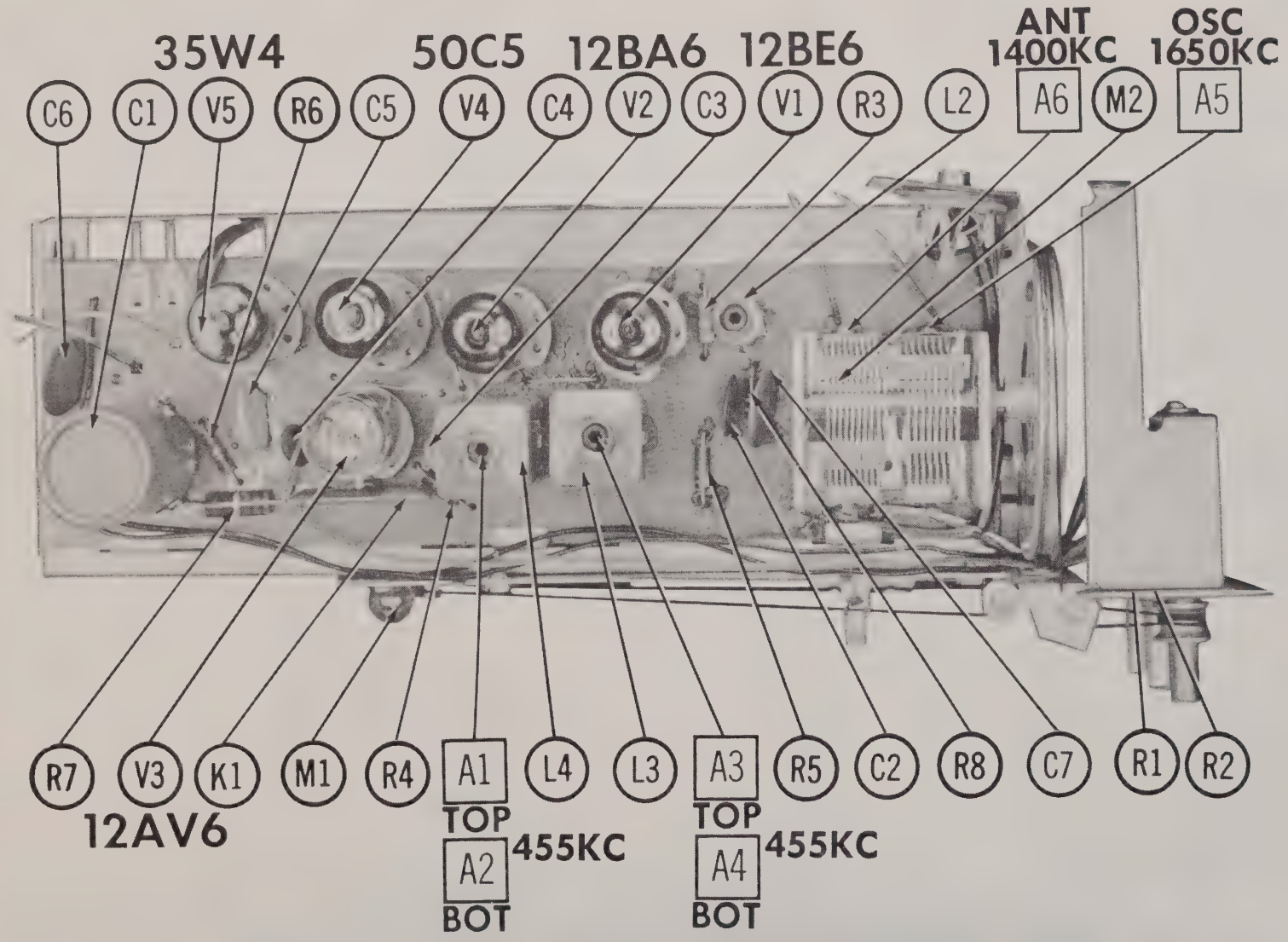


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	44328-2	PRS150/25V50 30/20	BBRT5315C	TCT3107	TDLT-15	FMT-327	TVA-3430
B	30	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	N2200
C3	150		43957-2							
C4	2000		43674-4	BPD-002	DD-202	BYA6D2	ED-002	DC522	5HK-D2	
C5	10000		43674-1	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C7	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	43745	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	
R2A	500K	½	43907	B-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R3	22K		43687-223	
R4	47K		43687-473	
R5	2.2meg		43687-225	
R6	120Ω		43689-121	
R7	1200Ω	1	43688-122	
R8	330K		43687-334	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	42700-20 ①	Z1101	A-3025	A-3332	24S53	S-12X	① Alternate Part #42700-11

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	44088 ①	4A06Z8.1 ①	① Parallel and phase
SP2	4"	PM	6-8Ω	45052 ①	4A06Z7.6 ①	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	45091-1					Includes Cabinet Back and Line Cord
L2	Osc. Coil	43644-1					
L3	Input IF	44282-1	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	44282-1	16-6780	BC-357	13-PC10	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	250mmf, 220mmf, 5000mmf, 5000mmf, 6.8meg, 470K, 470K	43743-2	Aerovox PA-512 Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Dial Lamp	45098	#12
M2	Tuning Cap.	45038	2 Gang (Ant. 25-275mmf)

CABINETS & CABINET PARTS

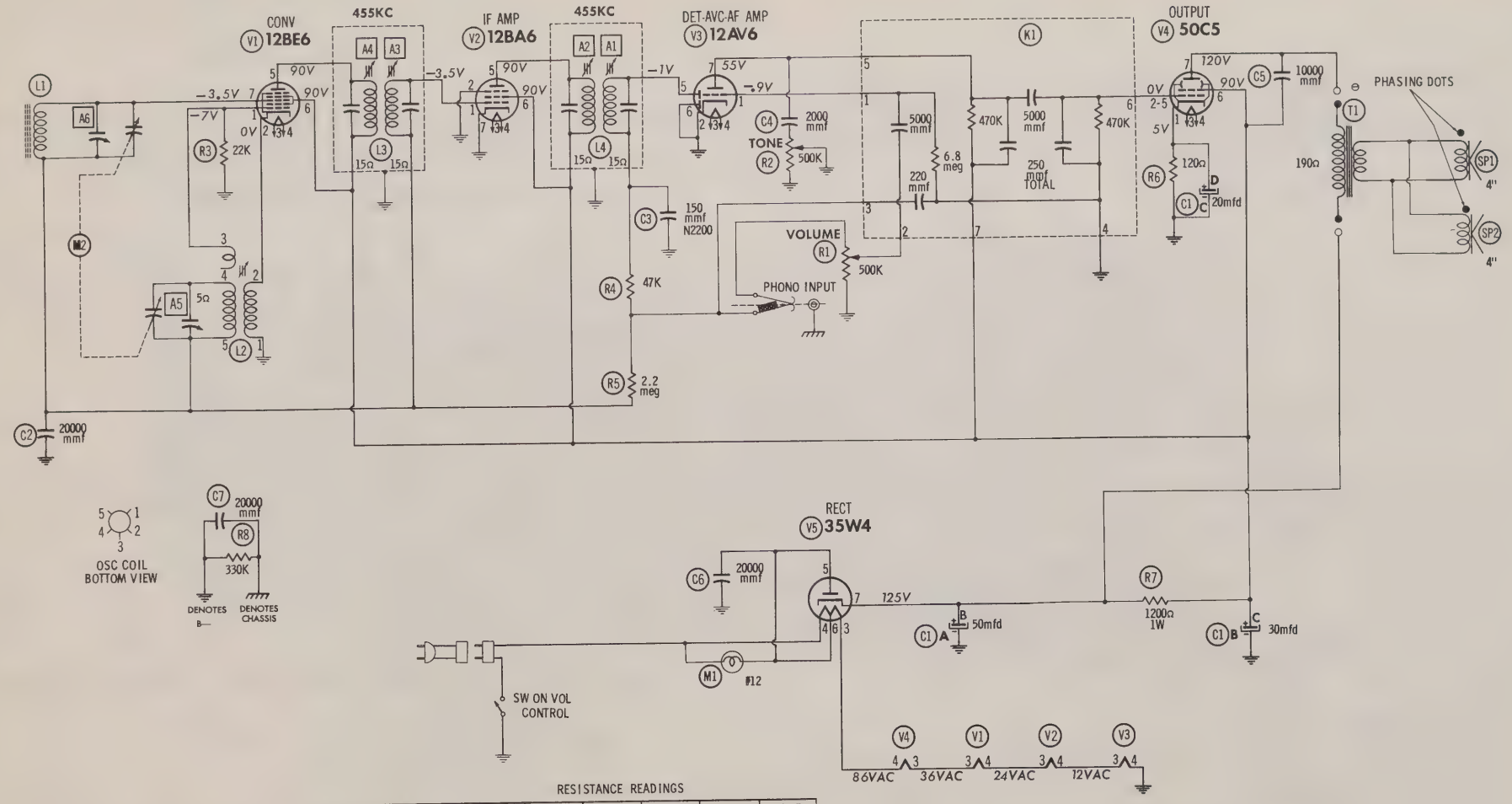
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	44903-17	On-Off-Volume, Model 8009, Brown
Knob	44903-48	On-Off-Volume, Model 8010, Ivory
Knob	44903-45	On-Off-Volume, Model 8011, Ming Blue
Knob	44903-13	On-Off-Volume, Model 8012, Candy Pink
Knob	44904-17	Tone, Model 8009, Brown
Knob	44904-48	Tone, Model 8010, Ivory
Knob	44904-45	Tone, Model 8011, Ming Blue
Knob	44904-13	Tone, Model 8012, Candy Pink
Knob	44905-17	Tuning, Model 8009, Brown
Knob	44905-48	Tuning, Model 8010, Ivory
Knob	44905-45	Tuning, Model 8011, Ming Blue
Knob	44905-13	Tuning, Model 8012, Candy Pink
Cabinet	45011-48	Model 8009, Brown
Cabinet	45011-17	Model 8010, Ivory
Cabinet	45011-45	Model 8011, Ming Blue
Cabinet	45011-13	Model 8012, Candy Pink
Dial Pointer	45074-1	
Dial Crystal	45095-1	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.3Ω	36Ω	24Ω	†1200Ω	†1200Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	12Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	120Ω	470K	36Ω	86Ω	470K	†1200Ω	†190Ω
V5	35W4	NC	NC	86Ω	110Ω	105Ω	105Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

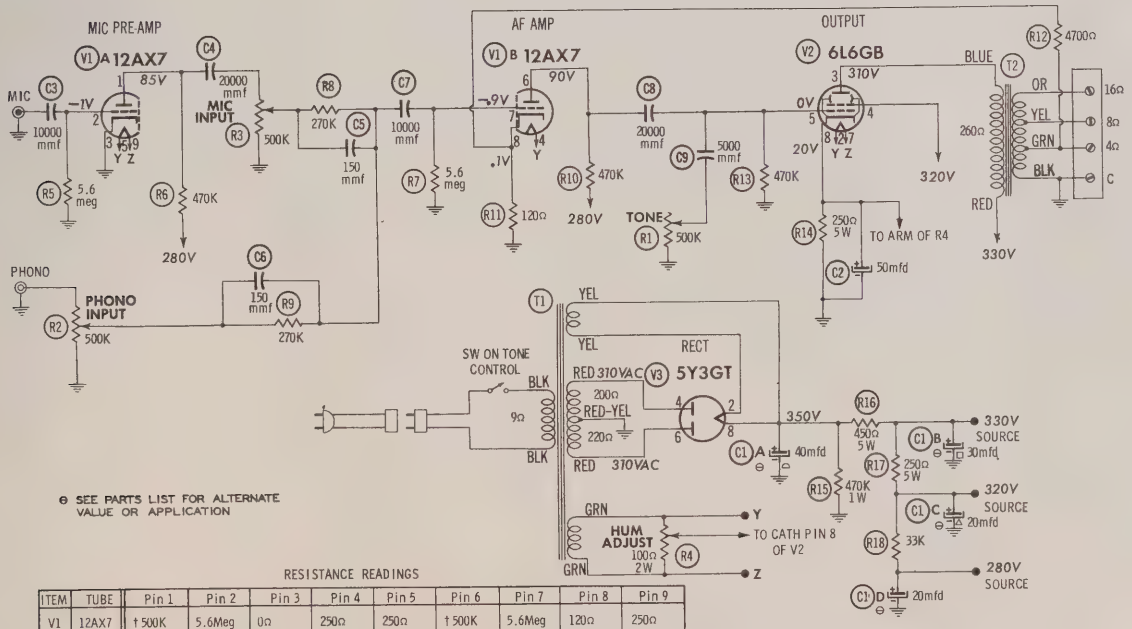
STROMBERG-CARLSON MODEL AU-62

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

STROMBERG-CARLSON
MODEL AU-62

TRADE NAME	Stromberg-Carlson Model AU-62
MANUFACTURER	Stromberg-Carlson Co., Sound Div., 1225 Clifford Ave., Rochester 21, N. Y.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (Three)	Types 12AX7 Preamp.-AF Amp., 6L6GB Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC-50/60 Cycles RATING .58 Amp. @ 117 Volts AC (58 Watts)

STROMBERG-CARLSON
MODEL AU-62



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†500K	5.6Meg	0Ω	250Ω	250Ω	†500K	5.6Meg	120Ω	250Ω
V2	6L6GB	NC	250Ω	†710Ω	†700Ω	470K	NC	250Ω	250Ω	
V3	5Y3GT	NC	20K(Min)	NC	200Ω	NC	220Ω	NC	20K(Min)	

† MEASURED FROM PIN 8 OF V3
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

391-13

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H232

FOLDER 13

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1 V2	Mic Preamp. - AF Amp. Output	12AX7 6L6GB	

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400	①		BBRQ0174				R2599 *
B	■30	350	①						
C	▲20	350	①						
D	20	350	①						
C2	50	25		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

① In some versions C1A is 50MFD, C1B is 20MFD, C1C is 30MFD & C1D is 30MFD (Part # 111001-001).
* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C5	150			BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C6	150			BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C9	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K		145655-000					Tone & Switch
R2	500K		145656-000					Phono Input
R3	500K		145656-000					Micro Input
R4	100Ω	2	145654-000					Hum Adj. (Wire Wound)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R5	5.6Meg			
R6	470K			
R7	5.6Meg			
R8	270K			
R9	270K			
R10	470K			
R11	120Ω			

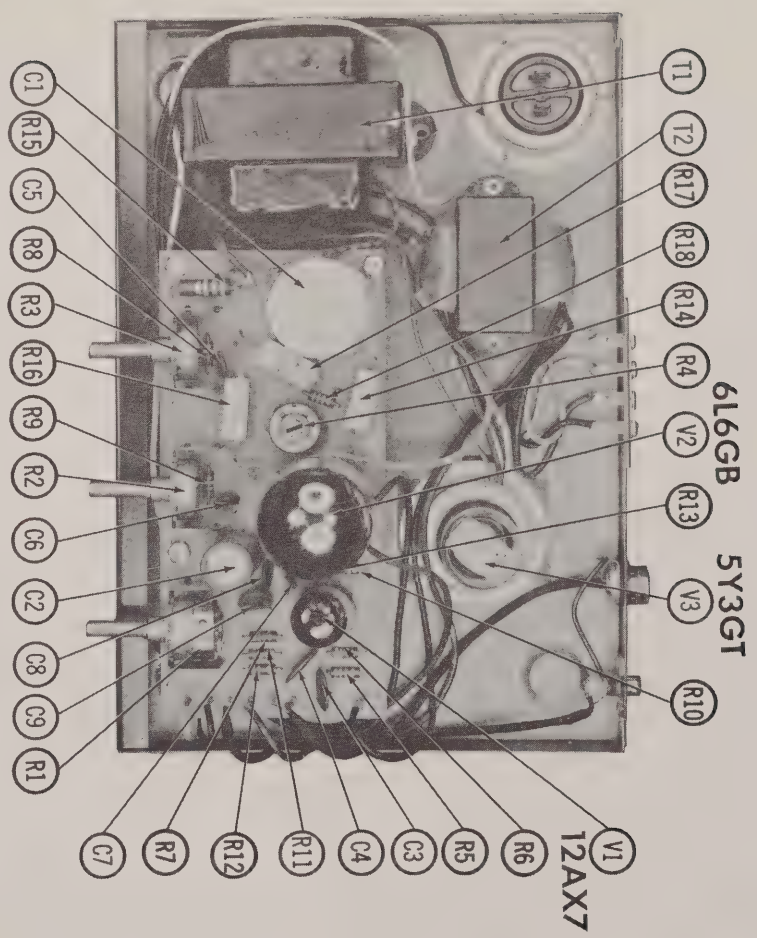
ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R12	4700Ω			
R13	470K			
R14	250Ω	5		
R15	470K	1		
R16	450Ω	5		
R17	250Ω	5		
R18	33K			

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	660VCT	5VAC	6.3V	161794	P9307 ①	P-2951 ①	PM8408 ①	22R37 ①	
	② .58A	② .074A	② 2A	② 1.1A						

① Fabricate Mounting

CHASSIS—TOP VIEW



TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2800Ω	16Ω Tap ② 8Ω, 4Ω	161353						

WIRING DATA

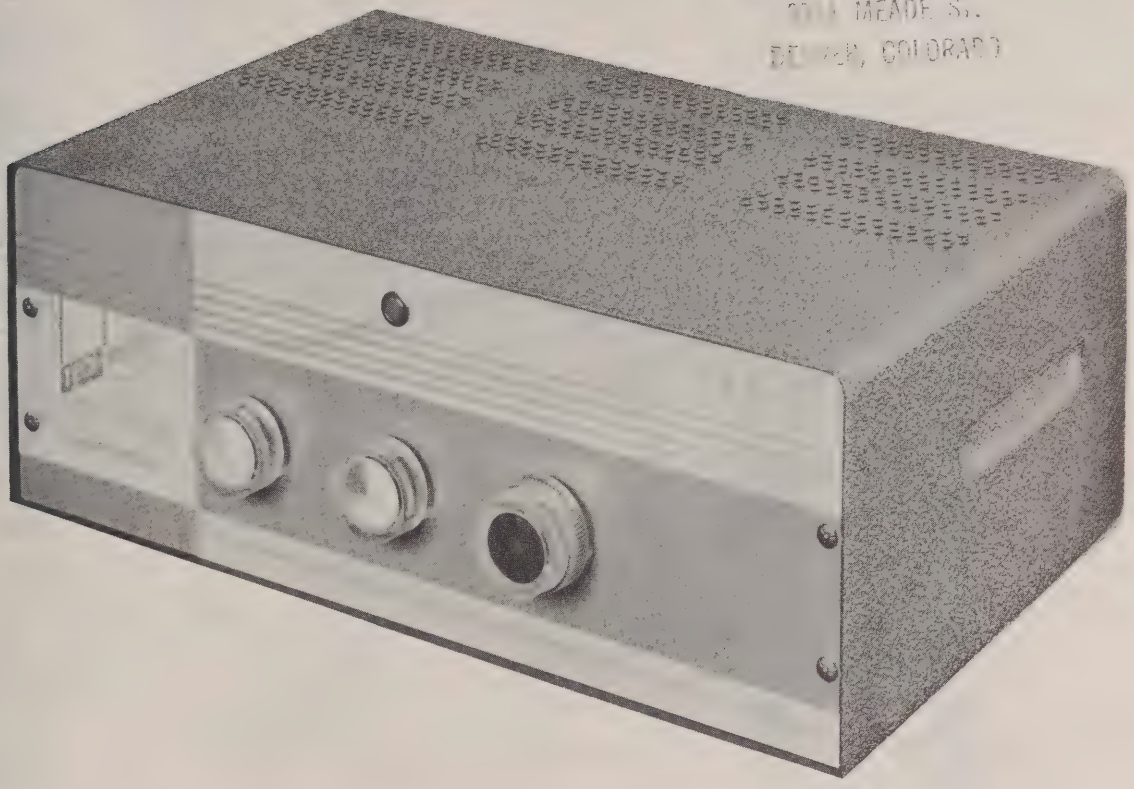
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 0401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder
*TRADE MARK

TECH-MASTER MODEL 21

PROPERTY OF
L. F. BLANKENSHIP
[illegible] MEADE ST.
DENVER, COLORADO

TECH-MASTER
MODEL 21

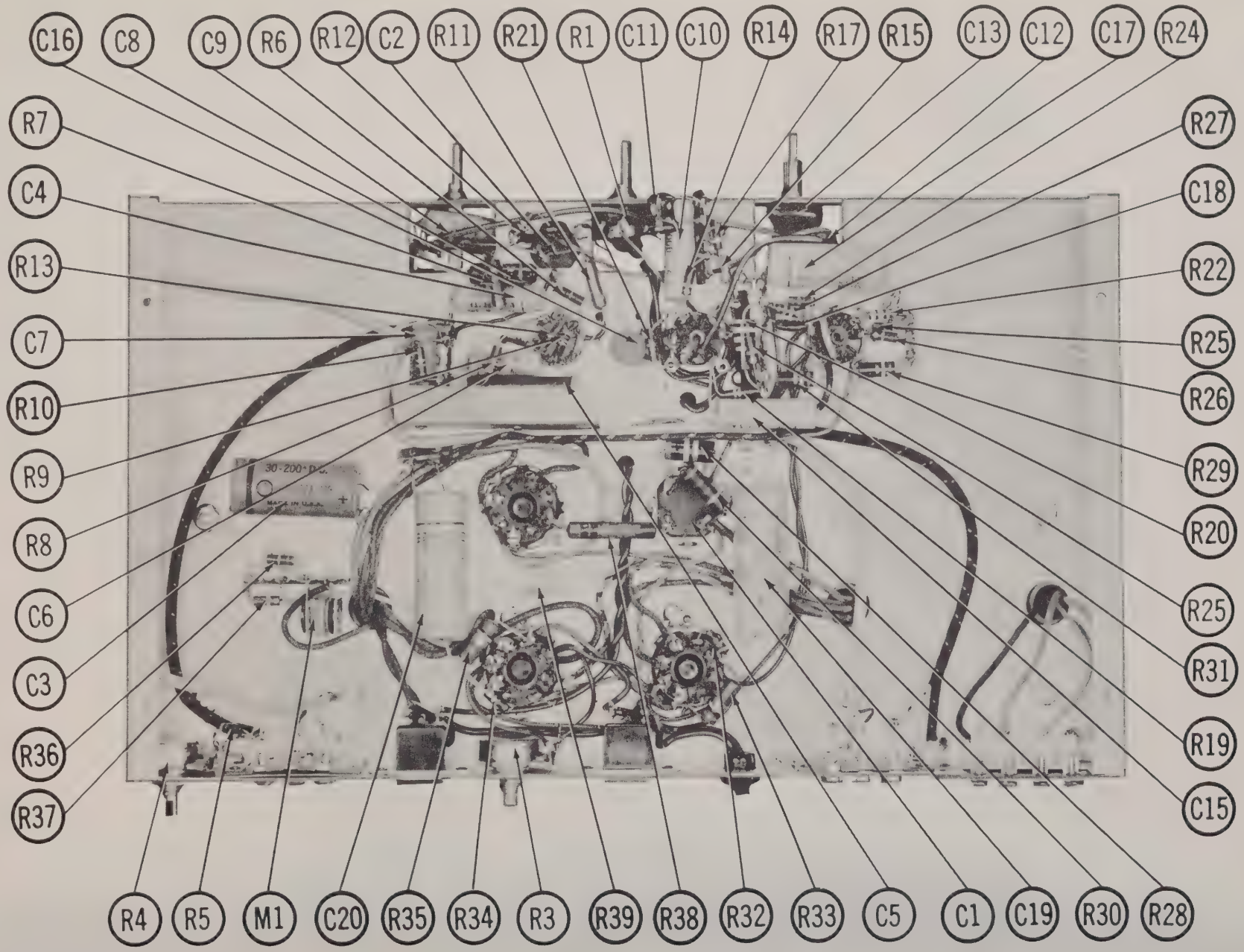


TECH-MASTER
MODEL 21

TRADE NAME	Tech-Master Model 21 (Kit Form: Model 21 Kit)
MANUFACTURER	Tech-Master Corp., 75 Front Street, Brooklyn, N. Y.
TYPE SET	AC Operated Audio Amplifier
TUBES (Six)	Types 12AX7 Phono Preamplifier, 12AU7 AF Amplifier, 6AN8 AF Amp. - Phase Inv., (2) 6L6GB Output, 5V4GA Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .9 Amp. @ 117 Volts AC (95 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Phono Preamplifier	12AX7	
V2	AF Amplifier	12AU7	
V3	AF Amp. - Phase Inv.	6AN8	

ITEM No.	USE	TYPE	NOTES
V4	Output	6L6GB	
V5	Output	6L6GB	
V6	Rectifier	5V4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							
	CAP.	VOLT.	Tech-Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	
C1A	■20	500			D0179.5	FP474.5		T-205	R2539 *	
B	▲20	500				TC72		MT-5010		
C	▲10	500								
D	20	450								
C2A	▲20	250		AFH2-26	B0210	FP217	TMD-24	D-110	TVL-2515	
B	■20	250								
C3	30	200		PRS250V30	BR3025	TC77	TD-30-250	MT-4530	TVA-1510	

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Tech-Master PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C5	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C6	.01	200		P288N-01	D6-103	CUB2S1	GP-10000	GEM-411	4TM-S1	
C7	.0033	600		P688N-0033	D6-332	CUB6D33	GP-3300	GEM-6233	6TM-D33	
C8	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C9	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C10	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C11	180			1469-00018	TCZ-180	22R5T18	TCO-180		MS-318	5%
C12	.002	200		P288N-002	D6-202	CUB6D2	GP-2000	GEM-622	6TM-D2	
C13	.02	200								10%
C14	1000			1464-001		1R5D1	ED-1000	MCB255	MS-21	10%
C15	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C16	4000			BPD-004	DD-402	BYA10D4	ED-004	UC-524	5HK-D4	
C17	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C18	100			1468-0001	D6-101	5W5T1	ED-100	MC235	1FM-31	
C19	.22	600		P688N-22		CUB6P22		GEM-6022	6TM-P22	
C20	.22	600		P688N-22		CUB6P22		GEM-6022	6TM-P22	

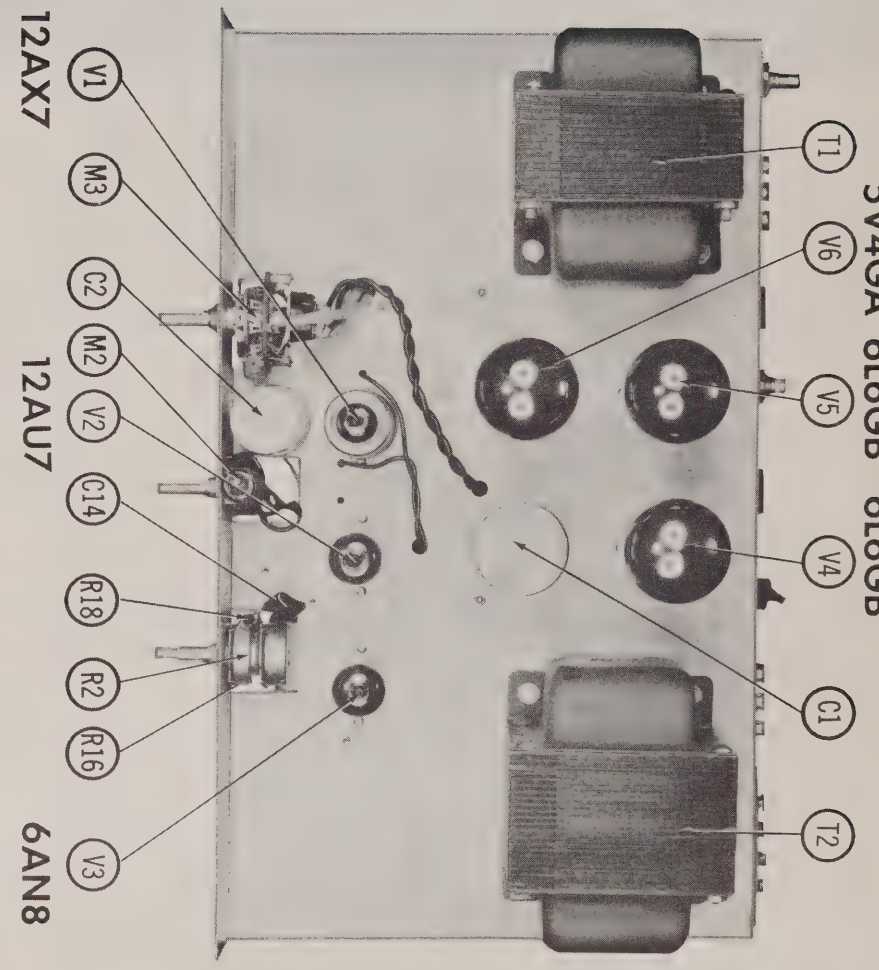
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Tech-Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	VC-32	B-70	A47-1meg-Z	Q13-137	U53	Volume
R2A	1meg	½	VC-33	F1-51		♦	■UE3765	Bass
B	1meg	½		R2-52				Treble
R3A	1500Ω	½	VC-30	AB-6	A47-1500S	Q11-109	U6	Hum Null
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R4A	100K	½	VC-31	B-40	A47-100K-S	Q11-128	U41	Magnetic Cartridge Load
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

♦ Concentrikit Equivalent; K-2 Kit, Base Elements and Shafts: B11-137, P1-020 (Panel) B13-137, R1-103 (Rear)

■ STA-LOC Equivalent; FB16L, OS625, RU16A, IS1125

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Tech-Master PART No.	NOTES
R5	4700Ω			
R6	10meg			
R7	56K			
R8	470K			
R9	470K			
R10	22K			
R11	56K			
R12	22K			
R13	2200Ω			
R14	100K			
R15	3300Ω			
R16	100K			
R17	100K			
R18	15K 5%			
R19	22K			
R20	39K	2		Note 1
R21	2200Ω			
R22	470K			
R23	15K 5%			
R24	1.2meg			
R25	680Ω			
R26	15K 5%			
R27	270K 5%			
R28	10K	2		Note 1
R29	47K 5%	1		
R30	8200Ω	1		
R31	47K 5%	1		
R32	1000Ω			
R33	100K 5%	1		
R34	1000Ω			
R35	100K 5%	1		
R36	6800Ω			
R37	15K 5%			
R38	10Ω	1		
R39	100Ω	7		

Note 1. Some versions may use 1 Watt in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Tech-Master PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .9A	760VCT @ .112A Tap @ 85V @ .003A	5V @ 2A	6.3V @ 2.8A	T15B					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Tech-Master PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5300Ω CT	16Ω Tap @ 8Ω, 4Ω	T1198						

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Tech-Master PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.003A		1159	RS050	50	

MISCELLANEOUS

ITEM No.	PART NAME	Tech-Master PART No.	NOTES
M2	Pilot Lamp		#47
M3	Switch		Function (Rotary Wafer Type)

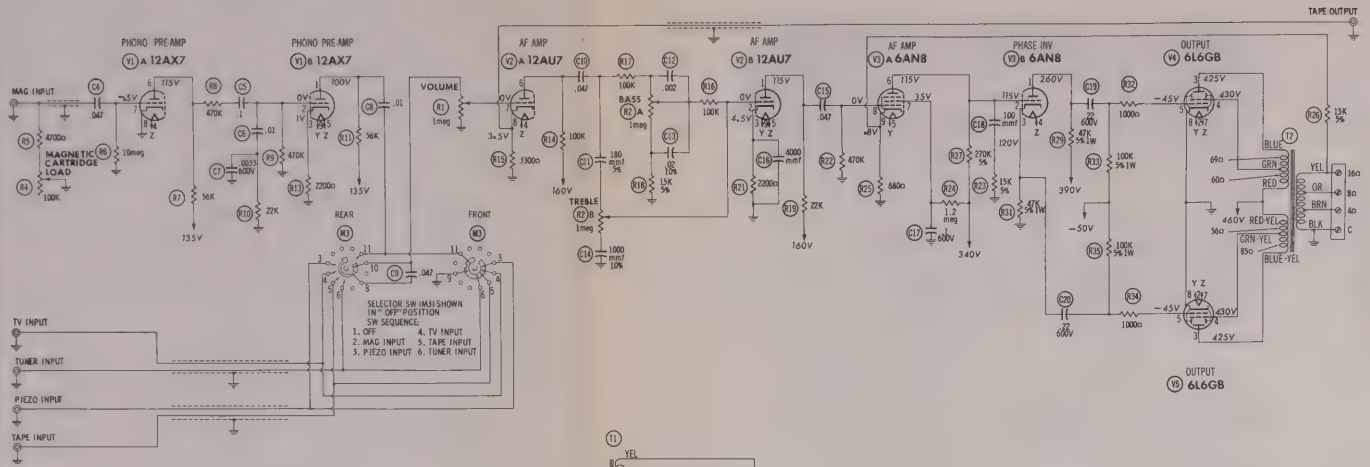
WIRING DATA

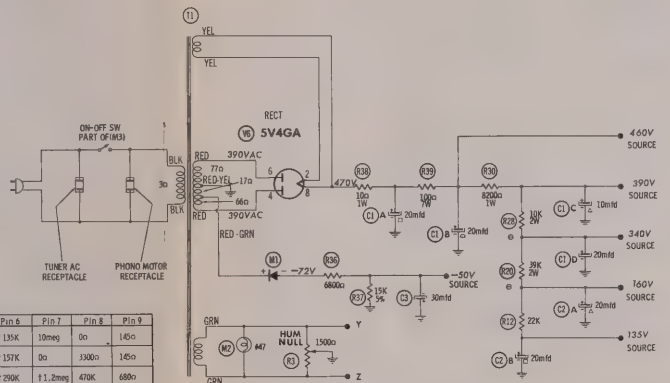
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑135K	470K	2200Ω	145Ω	145Ω	↑135K	10meg	0Ω	145Ω
V2	12AU7	↑71K	115K	2200Ω	145Ω	145Ω	↑157K	0Ω	3300Ω	145Ω
V3	6AN8	↑55K	↑290K	47K	145Ω	145Ω	↑290K	↑1.2meg	470K	680Ω
V4	6L6GB	TP	145Ω	↑240Ω	↑170Ω	115K	TP	145Ω	0Ω	
V5	6L6GB	TP	145Ω	↑250Ω	↑165Ω	115K	TP	145Ω	0Ω	
V6	5V4GA	NC	20K(Min)	TP	83Ω	NC	77Ω	NC	20K(Min)	

↑ MEASURED FROM PIN 8 OF V6
NC NO CONNECTION
TP TIE POINT

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Howard W. Sams & Co., Inc. 1958

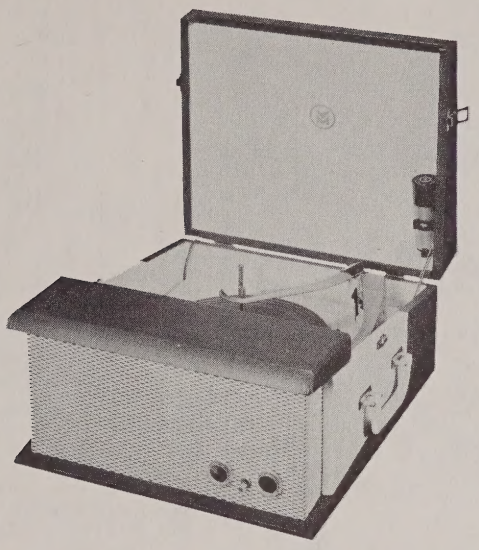
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

V-M MODEL 1276

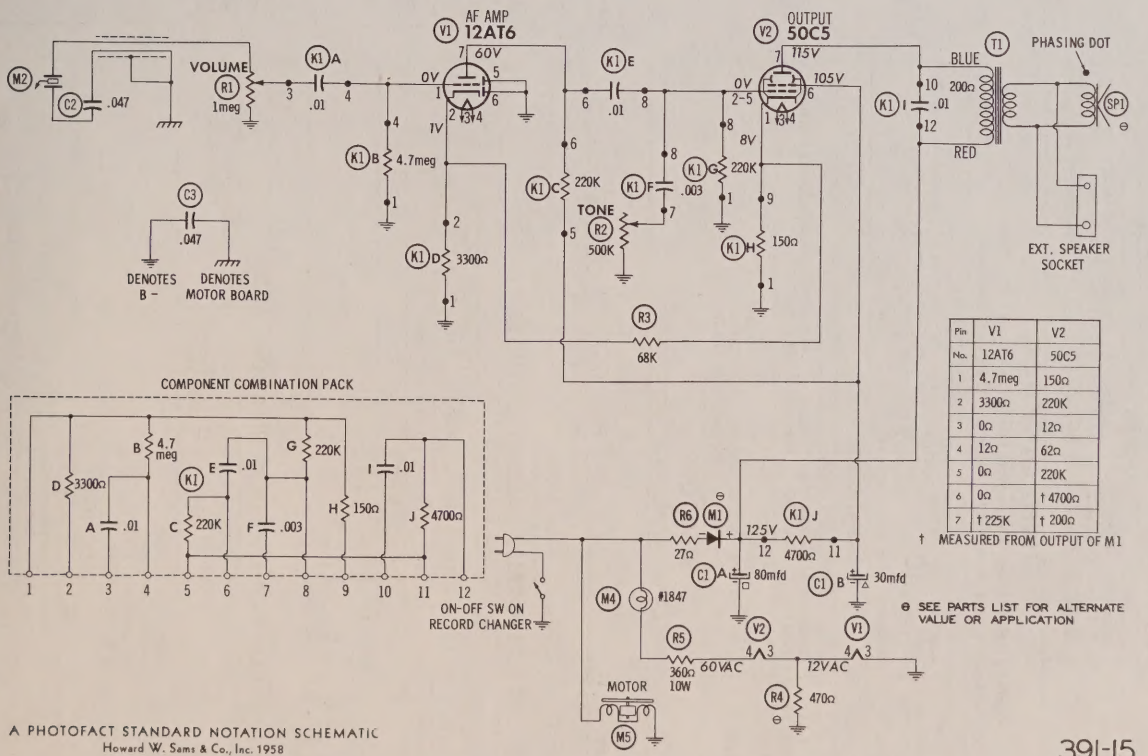
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



V-M MODEL 1276

TRADE NAME	V-M Model 1276
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES(Two)	Types 12AT6 AF Amplifier, 50C5 Output.
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .25 Amp. @117 Volts AC (25 Watts without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER V-M MODEL 1210-A-39-
SEE SIMILAR V-M MODEL 1200A- PHOTOFACT SET 353 FOLDER 16



Pin No.	V1 12AT6	V2 50C5
1	4.7meg	150Ω
2	3300Ω	220K
3	0Ω	12Ω
4	12Ω	62Ω
5	0Ω	220K
6	0Ω	† 4700Ω
7	† 225K	† 200Ω

† MEASURED FROM OUTPUT OF M1

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

391-15

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H182

FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AT6	

ITEM No.	USE	TYPE	NOTES
V2	Output	50C5	

ELECTROLYTIC CAPACITOR

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 80	150	12063	PRS150V8040	BBRD8415	TCD498	TDLD-10	MTD-303	TVA-2460
B	▲ 30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	12073			BC6S47 J		ACE6147	4SE-S47	
C3	.047	400	12070	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	12329	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	12328	B-59	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		V-M PART No.	NOTES
	OHMS	WATT		
R3	68K		11173	
R4	27Ω		12309	Note 1

ITEM No.	RATING		V-M PART No.	NOTES
	OHMS	WATT		
R5	360Ω	10	12311	
R6	470Ω		10653	

Note 1. Fuse resistor

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	3-4Ω	Part of SP1	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	14712 ①	57A21	① Alternate Part Number 8440 Includes T1

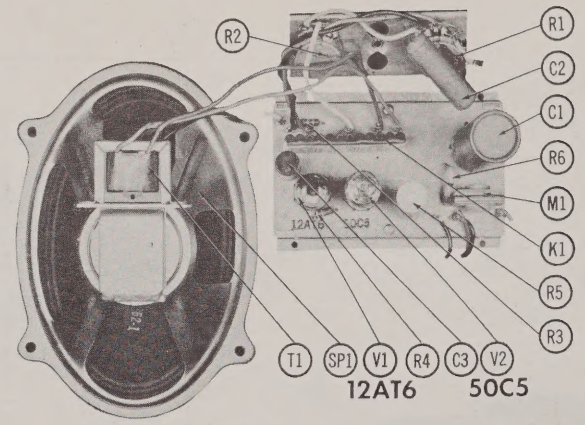
COMPONENT COMBINATION

ITEM No.	USE	DESCRIPTION	V-M PART No.	REPLACEMENT DATA
K1	Audio-Power Circuitry	10000mmf, 10000mmf, 3000mmf, 10000mmf, 3300Ω, 4.7meg, 220K, 220K, 150Ω, 4700Ω	12542	Erie 712-04

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	V-M PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.049A	12527 ①	1444 ①	RS065 ①	65 ① M150 ②	① Selenium Type ② Silicon Type

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	V-M PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	7316	55-T or 81-TB	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	V-M PART No.	JENSEN PART No.	WALCO PART No.	
M3	7317	† S-66 or † ♦ S-66SD or ♦ S-66D	† W75TPS or † ♦ W75DS or ♦ W75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

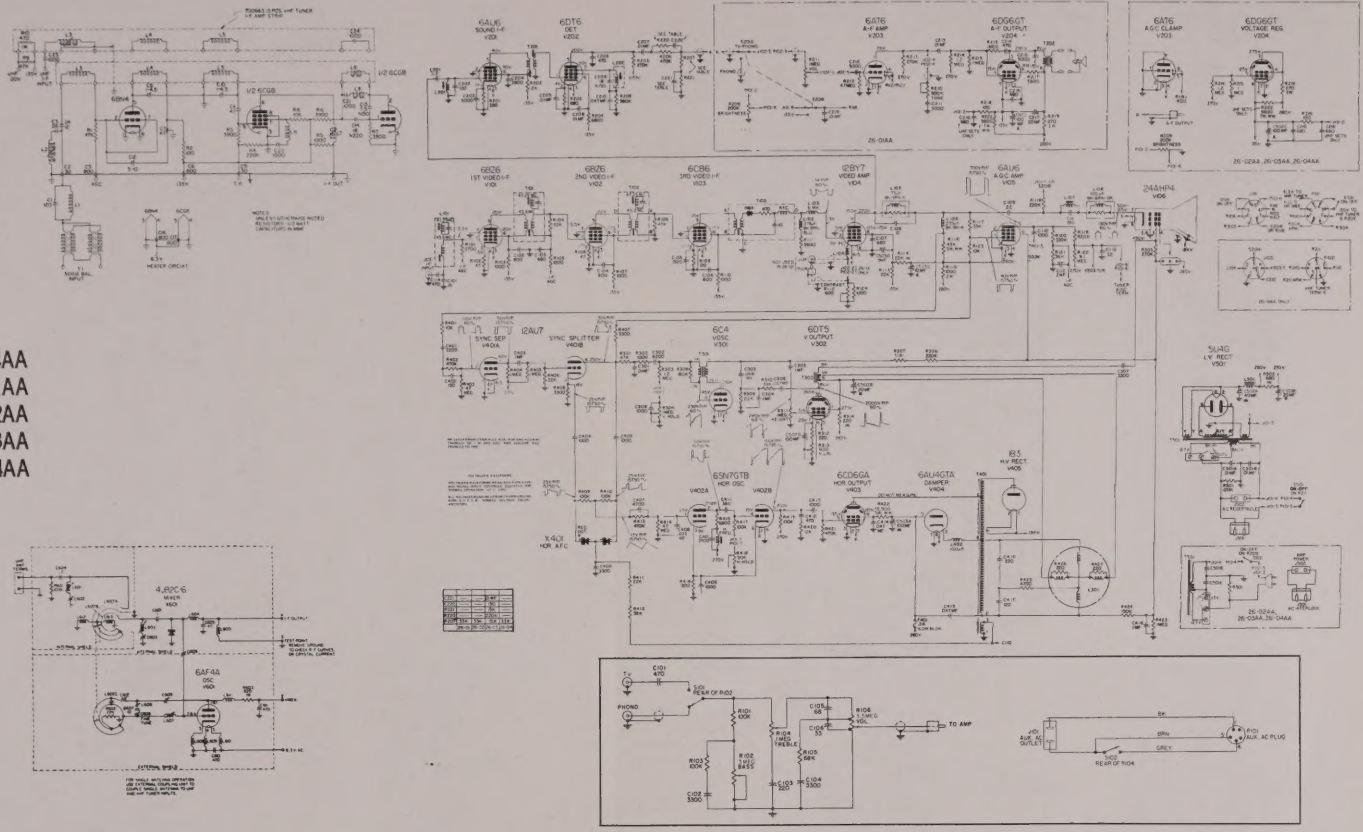
ITEM No.	PART NAME	V-M PART No.	NOTES
M4	Pilot Lamp	7791	#1847
M5	Phono Motor	6945	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

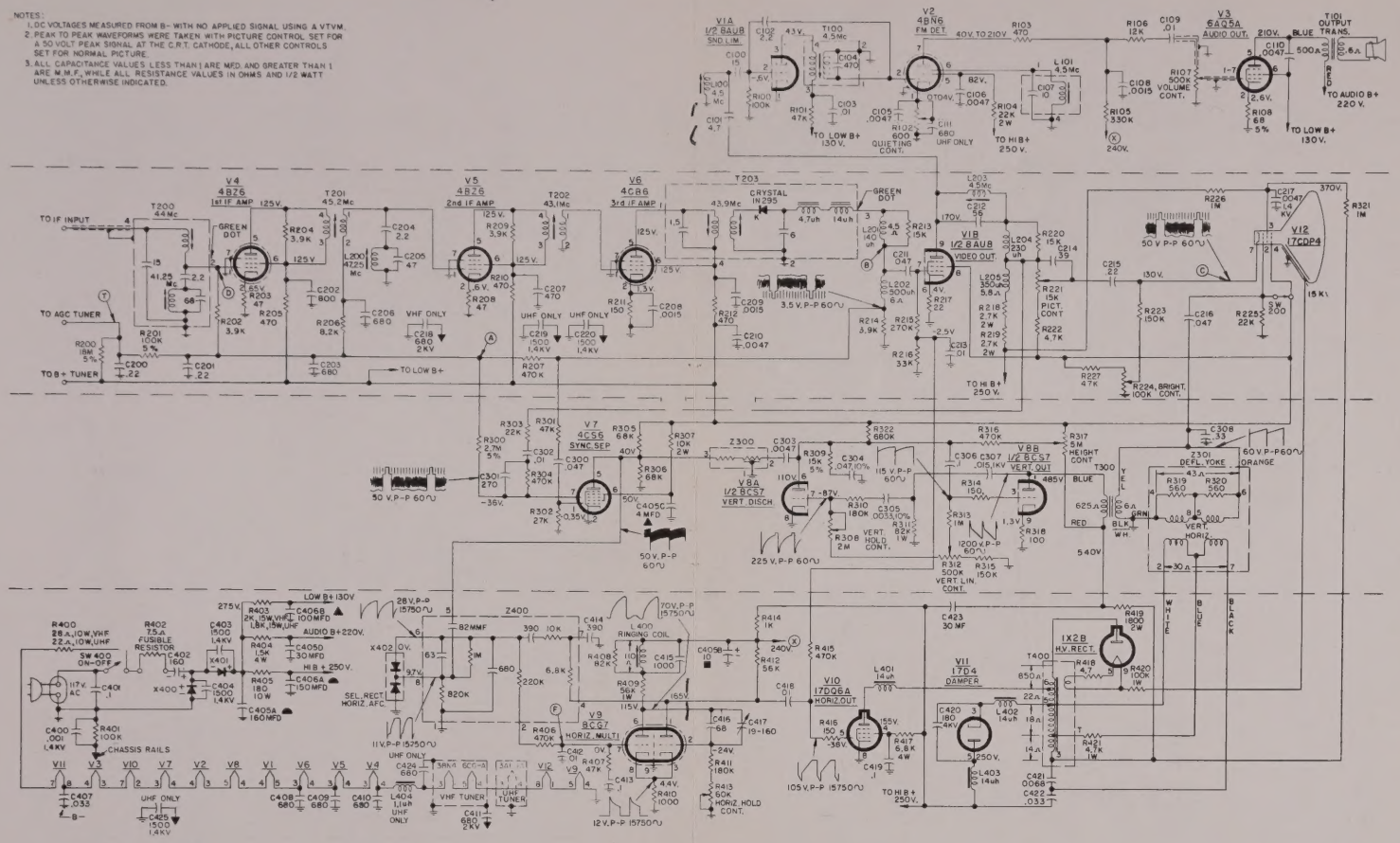
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



MAGNAVOX U26-04AA
CHASSIS V26-01AA
U26-01AA V26-02AA
U26-02AA V26-03AA
U26-03AA V26-04AA

SCHEMATIC COURTESY OF THE MAGNAVOX COMPANY


NOTES:
1. DC VOLTAGES MEASURED FROM B- WITH NO APPLIED SIGNAL USING A VTVM.
2. PEAK TO PEAK WAVEFORMS WERE TAKEN WITH PICTURE CONTROL SET FOR A 50 VOLT PEAK SIGNAL AT THE C.R.T. CATHODE, ALL OTHER CONTROLS SET FOR NORMAL PICTURE.
3. ALL CAPACITANCE VALUES LESS THAN 1 ARE MFD. AND GREATER THAN 1 ARE M.M.F., WHILE ALL RESISTANCE VALUES IN OHMS AND 1/2 WATT UNLESS OTHERWISE INDICATED.
V1A 1/2 6AU8 SND. LIM.
V2 4BN6 FM DET.
V3 6AQ5A AUDIO OUT.
T101 OUTPUT TRANS.
V4 4BZ6 1st IF AMP.
V5 4BZ6 2nd IF AMP.
V6 4CB6 3rd IF AMP.
V7 4CS6 SYNC SEP.
V8A 1/2 8CS7 VERT. DISCH.
V8B 1/2 8CS7 VERT. OUT
V9 8CG7 HORIZ. MULTI.
V10 17DQ6A HORIZ. OUT.
V11 17D4 DAMPER
V12 17CDP4
1X2B H.V. RECT.
V1B 1/2 8AU8 VIDEO OUT
TO IF INPUT
TO AGC TUNER
TO B+ TUNER
TO LOW B+
TO HI B+ 250 V.
TO LOW B+ 130 V.
TO AUDIO B+ 220 V.
CRYSTAL IN295
GREEN DOT
50 V P-P 60~
3.5 V P-P 60~
225 V P-P 60~
105 V P-P 15750~
111 V P-P 15750~
12 V P-P 15750~
LOW B+ 130V
AUDIO B+ 220V.
H.V. 250V.
SW400 ON-OFF
CHASSIS RAILS
UHF ONLY
VHF ONLY
UHF TUNER
VHF TUNER
SEL. RECT. HORIZ. AFC.
RINGING COIL
HORIZ. HOLD CONT.
VERT. HOLD CONT.
VERT. LIN. CONT.
VERT. HEIGHT CONT.
DEFL. YOKE
VOLUME CONT.
PICT. CONT.
BRIGHT. CONT.
QUIETING CONT.
BLUE
RED
GRN
BLK
WHT
YEL
ORANGE

AIRLINE
MODELS
GTM4200A
GTM4300A

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